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A liberal price will be paid, in cash or subscriptions, for the following numbers of the ENGINEERING AND MINING JOURNAL :

Year.	Vol.	Numbers Wanted.	Year.	Vol.	Numbers Wanted.
1872	XIV.	1 to 18 inclusive.	1875	XIX.	14, 15.
1874	XVIII.	4, 11.	1875	XX.	7, 12, 22, 23.

Address this office.

Many of our advices from the Western mining districts were delayed beyond the time of going to press by the strikes on the railroads.

THE LABOR WAR.

The ENGINEERING AND MINING JOURNAL has always maintained the rights of the laboring classes, nor do we intend to abandon them because of the disgraceful acts of the past week. The laborers all over the country have undoubtedly suffered greatly by the heavy decline in their earnings during the past two years, and their sufferings have, in some cases, been made more intense by the reports of the companies claiming to be earning regular and large dividends on the highly inflated capital of the "flush times." But there is no apparent reason for the sudden uprising of the more violent element in the class which has convulsed the country for the past ten days. No event since the outbreak of the civil war has been so momentous, or so injurious to the business interests of the nation, as the labor riots which we have now to record.

THE BEGINNING OF THE WAR.

No doubt the strike of the boatmen on the Chesapeake & Ohio Canal was the beginning of the war. This was encouraged and supported by citizens of Cumberland, and probably also by rival transportation interests. The impunity with which the boatmen have blockaded the canal for the past three weeks encouraged the train hands of he Baltimore & Ohio Railroad to adopt a similar policy in endeavoring to obtain a compliance with their demand for higher wages. The mismanagement of the military in the first encounter gave the strikers their first victory and encouraged the violent throughout the country, causing the strike to become general. A worthy sympathy with the sufferings of the workingmen was inconsiderately extended in the first stages of the strike to those who soon showed themselves the worst enemies of the laboring classes and of social order. The object of the strikers was to obtain higher wages, and in the senseless, barbarous, and criminal destruction of property they have already imposed a debt of many millions of dollars upon the few towns in which they have obtained temporary control. This debt will so greatly increase taxes and prevent the investment of capital that returning prosperity and business activity—the only basis upon which to found an increase in wages—will be greatly retarded. The laws of each State make the payment for property destroyed or losses occasioned by riots a charge upon the counties in which such loss occurred, a fact which was probably overlooked by the Pittsburgers when they allowed a riotous mob to destroy some ten million dollars' worth of property, to pay which will double the present high rate of taxes for many years to come.

It does not seem to occur to the workingmen—the great majority of whom deprecate the violent acts of the rougher element in their ranks—that the losses inflicted by them or with their connivance they themselves must ultimately pay for. It is pure folly and ignorance to imagine that the "capitalists," much less the railroad companies, are the losers of the property destroyed. It comes principally out of the laboring classes. With heavier taxes, rents and the cost of living are necessarily increased, and to compete with the manufactures of less burdened communities the item of wages must be reduced, though every item which enters into the cost of living is increased. Without the investment of capital there can be no reward for the working classes, and capital will surely avoid investment where it is subject to the violence and caprices of mob law.

Labor is a commodity the value of which in the market is subject to precisely the same laws as govern the price of sugar, or coal, or iron. If there is more offered than is wanted or can be used, the price declining till either the surplus is removed by emigration, or increasing demand occasioned by the growth of industry due to low prices. For some time past the labor market, like the coal market, has been overstocked, and both commodities have been freely offered at rates far below what may be considered as fairly remunerative. But why do the producers sell coal or labor at unremunerative prices? Simply because more is produced than the market will take, and those who sell cheapest sell most. If any producer ceases to sell his financial necessity will sink him; he therefore prefers to sell without profit, or possibly even for a time at a loss, rather than become at once bankrupt. The companies tried to keep up the price of coal by combination or organized strike—without violence—but the result of the high prices was to steadily diminish the market and increase the cost of production; it was contrary to the laws of political economy, and none more violently denounced the great coal combination than the working men themselves, who found the high wages and half time no equivalent for steady work. The high cost of living was also maintained by the high rates of wages, while the average earnings were gradually becoming less and less. Now the men wish by combination to force the community at large to pay rates of wages that the condition of business cannot afford. Nearly every railroad in the country has been run at a loss during the past few years, as the statement of their debt clearly shows—directors' glowing reports to the contrary, notwithstanding. There are few men in any class whose expenditures during the last year or two have not exceeded their incomes; they have been living on the accumulations of former years. The cost of living has been slowly forced back by inability to pay old prices, and in the process there has been great privation in every class.

The railroad employes are no exception, though indeed the following figures, which have been collected by the New York *Times*, show that they have fared better than those in most other occupations :

"There has been only one reduction made by the Pennsylvania Railroad Company since the war, and that was on Jan. 1, 1874, when the wages of all employes were reduced 10 per cent. The present strike on that road is made by the men in order to bring about a return to the former wages. The running men employed by the Pennsylvania Central get paid by the mile or trip, and they have all the work they are able to do for 30 days each month. The following is given as a table of the wages earned by the men last month :

Passenger engineers	$92 48	Passenger brakemen	$41 to 50
Passenger firemen	51 23	Passenger baggage-masters	50 00
Freight engineers	83 66	Freight conductors	63 00
Freight firemen	48 03	Freight brakemen	46 80
Gravel engineers	78 98	Track foremen	59 to 90
Gravel firemen	48 64	Yard conductors	54 to 69
Shifting engineers	83 17	Yard brakemen	45 00
Shifting firemen	52 28	Flagmen	46 80
Switchmen	35 to 40	Trackmen, per day	1 00
Passenger conductors	68 to 90		

"The New Jersey Central managers say they have made but one reduction in the wages of their employes since the war, and that was made three months ago on the brakemen and firemen, by taking away from them the sliding or mileage scale, and putting them under regular daily wages. The strike, the officials say, is undertaken by these hands to bring about a return to the mileage scale. They say that firing and braking constitute unskilled labor, any person being able to do either without any training, and are the easiest jobs on the road. The following tables show the amount earned last month by the different employes on this road :

Passenger engineers	$90	Freight engineers	$90
Passenger firemen	55	Freight firemen	55

Passenger brakemen made $1.75 per day, and freight brakemen from $1.70 to $2 per day.

"On this road a run—2,600 miles—constitutes a month's work. The engineers and firemen, both on the passenger and freight trains, are hired by the month and are paid monthly, whether they do a full month's work, or only a part of it, or nothing at all. The engineers, firemen, and brakemen, however, get paid for all extra mileage at the same rates. Thus, when business is dull on the road, the employes are sure to get full wages any way, and when business on the road is brisk, they have opportunities to earn much extra money. During June the average and highest salaries are said to have been as follows :

	Average.		Average.
Passenger engineers	$104	Freight engineers	$110
Passenger firemen	61	Freight firemen	66
Passenger brakemen	45	Freight brakemen	45

"The New Jersey Central controls the Lehigh and Susquehanna, and the wages on both roads are the same. The strikers assert that when the engineers' strike on the Central ended three months ago, the agreement, among others was made that brakemen and firemen should get $2 a day as wages, and be paid at the same rate for all extra mileage. They assert that ever since that time, and up to the time of the present strike, freight business has been so heavy on the road that brakemen and firemen have earned, according to the agreement, an average of

$3.18 a day, by means of the extra mileage. During four weeks the company paid the regular and extra wages, but for the past two months it has not only not paid the extra mileage, but has only paid the brakemen and firemen $1.75 a day instead of $3.18, and now owes them $200,000 back pay. On Monday the men sent a grievance committee to meet the company, but got no satisfaction. They were told that if they struck the company would be finally wound up. They then determined, they say, to strike, but postponed the strike until Wednesday morning, in order to effect a combination among themselves for the protection of the company's property from the lawlessness of outside mobs. They say they will protect this property unless the military is sent against them, or an attempt is made to put strangers in their places.

"The Delaware, Lackawanna and Western, and Morris and Essex Railroads are controlled by the same company. There has been but one reduction of wages, they say, on this road since the war, and that, which was a 10 per cent. reduction, took place last winter. The present strike is declared to be an effort to force a return to former wages. The following table is furnished to show the wages earned by the men on the road since the reduction:

	Present Rates. Per Day.		Present Rates. Per Month.	
Engineers	$2 41 to	$3 46	Switchmen	35 00 to 40 00
Firemen	.... to	1 73	Yard hands	35 00 to 40 00
Trackmen	.... to	90	Shop hands	28 00 to 110 00
Brakemen	1 54 to	1 75	Conductors	65 00 to 75 00

Every man has a perfect and indisputable right to dispose of his own services as he may think best, within the limits of the laws of the land. No one can say to the meanest laborer in the land that he shall work for less than he himself is willing to accept. No man has any more right to say to his neighbor, "You shall not work for less than such wages," than to say, "No man shall work less than twelve hours a day."

Every man has a perfect right to strike himself, but not to force others into striking. Much less can there be any justification for violence and the destruction of property which has attended this latest strike. If the men have grievances, as no doubt they have, this is no way to settle them. Does the destruction of property, entailing increase of taxes and the still further impoverishment of the country, enable industry to pay higher wages or to employ more men? Will the destruction of breakers and flooding and stoppage of mines enable companies, even now struggling with bankruptcy, to pay higher wages and give steady work?

It is not the workmen as a class that commit these riotous acts, but rather the tramps, Mollies, and other worthless characters, who use the name of the honest laborers to cover their misdeeds. Let the workingmen everywhere themselves oppose and put a stop to these unlawful acts. In doing so they will best serve their own interests, for if there is any one fact more evident than another, it is that no concessions can or should be made to mob violence, and that the severest measures should, where necessary, be adopted to insure a prompt obedience to the laws of the land. The strike ended, arbitration will be in order, but there can be no concession to the demand of an armed mob.

IS PRECIOUS METAL MINING PROFITABLE?—II.

Staff Correspondence of the Engineering and Mining Journal.

To answer this question statistically is a matter of no small difficulty, on account of the difficulties in the way of obtaining statistics of individual or company work, and the imperfect records of the early days. We may, however, ascertain the elements of the problem with considerable accuracy, so far as the whole industry is concerned, while private and personal profits can be mentioned in many cases. Under any circumstances, if the whole business can be shown to have been profitable, it necessarily follows that the majority of individual ventures must have paid.

About two years ago a statement of the total expenditures and returns of gold and silver mining was published in the *Mining Review* of Colorado, which, at the time, was very extensively commented upon and copied. The following statement will show some variations from that one, owing to the fact that more data bearing on the subject have been obtained. The two main items in the question are: First, the amount of actual capital (cash) invested in opening the mines; and, second, the amount of labor expended by miners who had no capital, and received no cash for their labor except what they actually produced. A third item may also be introduced, viz. the capital brought out to the West by immigrants in the shape of clothing, food, stock, tools, etc. etc. This element did not appear in the statement at first made.

First, then, how much cash was invested from 1850 to 1877 in gold and silver mining? Of course, almost the entire amount came from the East and Europe. Careful search in the large money centers of the Atlantic States shows that about $450,000,000 in paper debentures has been issued to provide for working capital in mining operations. In Europe and in the smaller towns of the United States about $150,000,000 of stock has been issued, making in all $600,000,000. Of this total about 60 per cent. was paid up in cash, or $360,000,000, the balance still remaining as paper. This gives the main capital put into the industry.

The second is the labor account. The West now contains about 25,000 actual miners. In 1850 about 10,000 men were engaged in this work, and from that date the number gradually rose. Fifteen thousand would, therefore, be the average laboring population. Fully half of these undoubtedly worked on wages, receiving gradually the bulk of the $360,000,000 derived from the sale of mining shares. The balance worked for themselves, accomplishing much in the way of development, but receiving no cash except that produced by their own labor. But to be on the safe side let it be assumed that 10,000 men worked at their own risk for 27 years. Charging their labor at $4 per day, this item amounts to $324,000,000.

Thirdly, we come to the capital represented by personal property, food, money in pocket, etc., brought to the West by immigrants. This item must be largely a matter of conjecture. It is well known that most miners arrived "dead broke." Many had a wagon and yoke of oxen or mules, many brought a few months' supply of provisions. Some reached the mines with a few hundred dollars left. This item will certainly be abundantly represented by $25,000,000. A complete parallel to the great tide of emigration which peopled the Far West can be witnessed to-day in the Black Hills rush. That new field has drawn laboring men from all parts of the East and West by the thousand, and four-fifths arrive with scarcely enough cash in hand to pay for the first week's board.

Looking to the other side of the question, viz. the credit side, we find two items, viz. bullion produced, and assets created by the natural growth of the business. The first of these is a matter of record. One billion eight hundred and fifty million dollars' worth of metal has been produced by the Western mines during these 27 years. This figure may be verified, and it is probably too low by many million dollars, for it represents only the metal shipped by regular transportation companies. Undoubtedly large quantities of dust were carried away by individuals, of which no record has ever been obtained. It will answer the purpose of the present inquiry, however. The second item, created assets, is more difficult to denominate. It is a large figure, and corresponds to the item of improved property represented by the farmer's cleared and productive acres, the real estate owner's houses and business blocks, the merchant's ships, the banker's discounts. They have two values, their nominal and their actual value. The first corresponds with the ratio of interest *expected* from them; the second, with the rate *actually obtained*. There is still another method of evaluation, namely, that which they would bring under the hammer of the auctioneer. No doubt the latter is the safest to use, and in the present inquiry we shall take it. We have to deal with two kinds of property: first, mines; and second, reduction works. There has probably never been a better time than the present to arrive at the worth of the former. Values have shrunk to bottom figures. The majority of shareholders are struggling to realize. Stocks are as low, almost, as they possibly can be. The Comstock, which is yielding nearly $40,000,000 gross annually, and paying about $25,000,000 in dividends, is selling on the Exchange at a valuation of about $75,000,000. As this one lode is producing a little less than one-half the bullion of the West, and is at once in its various parts the most profitable and most profitless mine in the West, it may be taken as a safe guide in estimating the worth of the rest of the mines at auctioneers' figures, with which stock quotations at panic times will correspond very closely. In other words, it will be safe to assume that $150,000,000 would buy every mine of gold and silver property in the West, if owners were compelled to realize. The cash value of reduction works will have to be estimated somewhat differently. They may be separated completely from the mines and placed on the same basis as machines which turn out a commercial article (bullion) from a raw article (ore). There are in the West about 3,000 mills, having a total capacity of 10,000 tons per day, treating, therefore, about 3,000,000 tons annually. The cost of beneficiating ranges from $1.50 per ton for free gold ores, to $50 per ton for refractory silver ores. Inasmuch as the large quantity of ore is of low grade, and cheaply reduced, $8 per ton may be assumed as a fair figure. We have, therefore, $24,000,000 as the cost of reducing $60,000,000 of ore. (The annual yield is nearly $90,000,000, but about one-third of this is placer gold, needing no milling facilities.) The actual net yield to mill men would, therefore, be $40,000,000, assuming that all were custom establishments. Those which are not are producing a still higher yield. A machine or set of machines which yield $40,000,000 must certainly be worth intrinsically and commercially $200,000,000, if not more. We may, therefore, take that figure as the worth of the reduction establishments of the West, though it is to be remembered that out of this $40,000,000 the ore treated must be paid for.

We may recapitulate as follows:

INVESTMENT.—Cash	$360,000,000	
Labor	324,000,000	
Personal assets	25,000,000	
RETURN.—Bullion		$1,850,000,000
Created values, mines and mills		350,000,000
PROFIT	1,491,000,000	
	$2,200,000,000	$2,200,000,000

This represents an income of $50,000,000 per annum, during twenty-seven years, from an investment of something over $700,000,000.

This fifty million is, of course, to be debited with the expenses of mining. Were all mines worked correctly and economically, 3,000,000 tons could be broken at a cost not to exceed $5 per ton, including dead work, hoisting, pumping, timbering, etc. As all are not, the profits are unequally divided, a few making very heavy profits, and a large number doing but poorly, if not running into debt. Probably $30,000,000 would nearly represent the actual profits, even after making heavy deductions for transportation, dressing of ores, wear and tear of mining machinery, and accidents.

THE SILVER MOUNTAIN MINING COMPANY SWINDLE.

We have received from a correspondent in Nova Scotia a letter, from which we make the following extract:

"In January last I received a letter from 'The Silver Mountain Mining Company, Ferris District, Carbon County, Wyoming, office 1,193 Broadway, New York,' in reference to a mine about to be opened by the company. I and some friends purchased some shares, on which we have paid the first assessment, and a few

days ago we received notice of the second call, which must be paid prior to August 2," etc.

Our correspondent now wants to know if the mine actually exists and is being worked. In answer, we reprint from the New York *Times* the following *expose* of the swindle, and trust it will put the unwary on their guard against the tricks of the parties mentioned. It is marvelous what an amount of credulity exists among those who, like our correspondent, invest in mines without ascertaining whether they exist or not. But if it were not that there are those who are easily parted from their money by glib-tongued rogues, doubtless this class would soon cease to exist. It may be taken for granted that any mine brought out in this market which is worthy of attention will be found on record in the pages of the ENGINEERING AND MINING JOURNAL, and we shall at all times be pleased to give information to subscribers concerning the standing of new concerns, and to expose fraudulent enterprises when we can obtain information establishing their character.

Mining is by far the most remunerative investment that is now offered to capitalists. There is no necessity, however, for going into it as one would in a game of *rouge et noir*. Good mines are abundant, and the exercise of a proper degree of discretion will make these investments not only exceedingly profitable, but perfectly safe. The very fact that they are profitable is made use of by adroit swindlers to beguile simple-minded speculative people of their money. To those who are disposed to invest in mining, we would repeat advice often given in these pages. Use the same degree of care and foresight that you would in making investments in city lots or other property. There are plenty of valuable mines offering, and, if you cannot obtain satisfactory evidence of the *bona fide* character of one, keep your money till you find one that affords assurance of safety and profit. It may be taken for granted that any concern which endeavors to sell its stock or securities in the manner followed by this concern is fraudulent.

"THE SILVER MINING SWINDLE.—The exposure in the *Times* a few days ago of the nefarious object of the Silver Mountain Mining Company carried consternation into the midst of the swindlers who devised and have conducted that institution. With its dissolution they see their last opportunity of making money out of the unwary passing from them. For years they have been banded together for the purpose of swindling. Beginning with the formation of fraudulent lottery companies, they have made use of every means to make money at the expense of the ignorant. When the United States and local officials made an onslaught upon them last winter they were for a time at a loss what to do, but soon their master-spirit hit upon the idea of organizing the Silver Mountain Mining Company. This master-spirit is a man named John M. Pattee, who has for years been engaged in swindling, and who has amassed a large fortune thereby. The *Times* devoted a good deal of space some months ago to detailing the incidents in this person's career of wrong-doing. It is, therefore, not necessary now to say more than that Pattee has operated as a lottery swindler in this city and in Western cities, and that he was the backer of the Bullion and Cabarrus Gold and Silver Mining Companies, which the *Times* forced out of existence last fall. Pattee has an intimate knowledge of the laws of this State so far as they affect such enterprises as he has led in, and it was he who suggested the formation of the Silver Mountain Mining Company in strict accordance with law. When that corporation was organized, the intention of Pattee and his associates—among whom is Ellis H. Elias, the principal of Russell & Co., the bogus firm of dealers in pinchbeck jewelry at No. 37 Bond Street—was to keep the institution in existence until they could not procure any more money from dupes, and then to announce that the Great Silver Mountain Lode had not 'panned out' as well as was expected, and consequently shareholders must lose the money they invested to develop the mine. At the time the Silver Mountain Mining Company was projected the swindlers were puzzled as to what persons should be put forward before the public as its managers. Pattee, of course, dared not appear, and the names of the persons who conducted the Bullion and Cabarrus Companies would have immediately thrown discredit upon the enterprise. H. L. Tyler and George J. Chubb, two men who were not well known to the public as swindlers, were, therefore, engaged to act as President and Secretary of the company.

"A very few weeks after the company was organized letters inquiring as to its character were received by Mayor Ely and by Secretary of State Bigelow. In reply to one of the inquiries addressed to him, Mr. Bigelow wrote a letter—which he afterward used as a circular—in which he said :

"'I have received several dozen inquiries from the Western and Southern States, more or less resembling yours, in regard to the character of this company (the Silver Mountain Mining Company). The writers have generally been requested to act as agents of this company. To all such inquiries I am obliged to say I know nothing of its responsibility; but that it would never occur to me to place any faith in a corporation which should put forth such an appeal to the public as is made in the little pamphlet it is circulating, entitled "A few facts concerning the immense profits from working mines on the California plan. Enormous returns from small investments! How colossal fortunes have been made from small investments! Better chances are offered now than ever before." I do not remember to have ever heard before of either of the officers of the company or of any of the persons to whom the public is referred for "further information about the company and the richness of its mine." I have transmitted your letter to the Mayor of New York City, with the request that he institute such an investigation as the circumstances may seem to require.'

"As soon as the attention of Mayor Ely was called to the fraudulent corporation, he requested Superintendent Walling to discover its nature and the characters of its managers. The result of the action of Superintendent Walling is contained in the following letters:

"'*Hon. Smith Ely, Jr., Mayor, etc.:*

"'SIR: In relation to the Silver Mountain Mining Company—office located at 1,193 Broadway—I respectfully report that from information obtained there is no doubt that the scheme is gotten up solely for the purpose of swindling. I inclose a report from Officer Adams. Very respectfully, GEORGE W. WALLING, Superintendent.'

"The report of Detective Adams as to the fraudulent company is as follows:

"'*George W. Walling, Esq., Superintendent of Police :*

"'SIR: In compliance with your orders to investigate the Silver Mountain Mining Company, located at No. 1,193 Broadway, Room 18, I respectfully report as follows: William Ward & Co., bankers and brokers, Drexel Building, say that the stock is not quoted or known in the New York Market. P. G. Hamburg, City Marshal, Nos. 117 and 119 Nassau Street, says they use his name without his authority. J. W. Garfield, No. 330 Delancey Street, says he knows Tylor and Chubb, and never knew them to be in any legitimate business. I. N. Soper, No. 27 City Hall Square, says he knows Tyler and Chubb, and never knew them to be in any reputable business. Respectfully submitted. THOMAS F. ADAMS, Twenty-first Precinct.'

"The Police do not appear to have investigated the careers of Messrs. Chubb and Tyler very closely. If they had done so, they would have learned that Chubb was at one time a clerk in the Post Office at Laramie City, Wyoming Territory, and while in that position acted as an agent for John M. Pattee, who was then running a fraudulent lottery, and to whom it was necessary to intercept letters complaining of the character of his enterprise. When Pattee left the West Chubb came to New York with him, and has taken part in most of the schemes since that time. The details of the career of Tyler are not known. Pattee, Elias & Co. brought him into public view as the ostensible President of the Silver Mountain Mining Company."

ON THE REDUCTION OF SILVER ORES BY THE CALIFORNIAN METHOD IN MEXICO.

By H. Richter.

The ores raised at the Tajo Mine at Rosario, near Mazatlan, are essentially mixtures of quartz with argentic sulphide, and probably some silver and gold, together with some galena brown blende and pyritic minerals ; the average contents of silver being 40 oz., and of gold 2¾ oz. per ton, with from 6 to 8 per cent. of lead and zinc. The reduction is effected by the American method of pan amalgamation without previous roasting. The ore is partially divided, by hand-picking, into rich and poor classes, without, however, attempting to remove any of the lead or zinc minerals, which are passed by a mill of twenty stamper-heads, with rotating lifters weighing 7 cwt. and making sixty 9-inch strokes per minute, through grates having apertures ½ inch in diameter, 24 tons being stamped daily. The slimes pass first into a pit 3·3 feet deep and 9·8 feet in cross section, where the richer material forming the normal ore for the pans is deposited, after which a second collection of poorer stuff is made in a second pit of the same size, and finally the waste, together with that from the pans, is passed through a series of catch-pits 9·8 feet long, 5 feet broad, and 3·3 feet deep.

The reduction of the richer slimes is effected in pan amalgamators of the improved Varney pattern,* which perform the three operations of grinding the particles of ore to impalpable mud, mixing the particles with the chloridizing agent, and reducing and amalgamating the silver minerals. The pan is essentially a mill, with cast-iron instead of stone grinding surfaces, which is adopted partly from economy and partly from the property possessed by iron of reducing the mercurial chlorides. These surfaces are put together in segments, so as to be easily renewable, as they are worn out in forty days when worked at seventy revolutions per minute. The charge of the pans is 800 lb. of ore stuff from the stamps, which is mixed into a thin mud by adding water and running the pan for half an hour or an hour until the materials are sufficiently ground. During this period a jet of steam is introduced, in order to warm up the contents to 176° F. Chloridizing and reducing agents are then added in the following proportions : sulphate of copper, 4 lb. ; salt, 40 lb. ; and mercury, from 70 to 90 lb., including ¼ lb. of zinc amalgam, or about thirteen times as much salt and thirty-two times as much mercury as is used in the Mexican or "patio" process of amalgamation. The copper salt is added in somewhat larger quantity than would be required for the chlorination of the whole of the silver, assuming it to be effected by cupric chloride. The reactions are considered by the author to be substantially the same as those in the "patio" process, and as probably occurring in the following order : amalgamation of metallic silver and gold ; conversion of cupric sulphate into chloride ; conversion of silver sulphide by cupric chloride, with the formation of cuprous chloride, into silver chloride ; reduction and amalgamation of the latter by metallic mercury ; and, finally, decomposition of the mercurial chlorides formed by the iron of the pan. The zinc amalgam is said to help by the production of electric currents. Like the Mexican process, the method is not well suited for the treatment of minerals containing lead, zinc, or antimony, the working of such ores being attended with a considerable loss of silver and mercury.

The amalgamation process proper requires about four hours, the progress of the operation being controlled by washing out samples of the mud at intervals, and observing the color and form of the mercury globule obtained, which should be gray, and "tail," or assume an oval form.

The finished charge from the pan is received in a cylindrical washing vat, or settler, and allowed to rest for an hour, whereby the bulk of the mercury and amalgam separate from the mud and fall to the bottom. Afterwards the lighter particles are removed through a hole in the side by a stream of water, which flows for fifty minutes ; lastly, the bulk of the mercury is separated from the remaining heavy mud charged with ore, by drawing it from a lower opening for ten minutes. As the amalgam is very poor, owing to the large quantity of mercury used, only the excess of the latter introduced at each washing above a large fixed amount is removed in clearing the settler, the whole quantity being only removed at intervals of eight days.

The waste or tailings of the first operation, consisting largely of heavy metallic sulphides, with probably some silver sulphide, and containing about 35 per cent. of the original amount of silver, are reworked in four large pans or "tailing mills," which take charges of double the weight of those worked in the ore-pans, but are otherwise similarly arranged. An assay of this material gave 28 oz. of silver per ton, and appeared by vanning to consist of 9-10 of quartz and 1-10 of heavy sulphides, pyrites, blende, and galena. The reagents used per 1,600-lb. charge are, salt, 40 lb., sulphate of copper, 5½ lb., and mercury, 120 lb., the latter being about seventy times the weight of the silver in the ore.

The working of the tailings, both in the pans and settlers, is exactly similar to that in the ore mills. The waste from the last washing, containing about 1 oz. to the ton, is passed through a catch-pit before being allowed to run to waste. A further quantity of 20 per cent. of silver is recovered by the second operation, showing the final loss to be about 15 per cent. of that contained in the ore. Allowing four hours for the filling of the tailing tanks, the extraction of the silver from the ore, counting from the first charging of the ore-pan, is effected in sixteen hours. The amalgam collected is treated at intervals by filtration through canvas, after which it is washed in quantities of a few cwts. at a time in a pan with water to clear it from mechanical impurities, filtered a second time, and finally heated in retorts holding 1,200 lb. The time required for distillation is from eight to fifteen hours, on account of the great variability in its composition. The sponge silver for the retorts is melted in blacklead crucibles holding 50 lb., and run into bars.

The great advantages of the pan process, as compared with other metallurgical operations, namely, speed and cheapness of work, together with large production from a small plant, are, in the author's opinion, obtained by a considerable waste of silver, which he calculates at 18·7 per cent. of the total quantity, and as due to the effect of the lead and zinc ore. Nearly the whole of the gold is, however, saved. The loss of mercury is 2 lb. per 2,000 lb. of ore treated, or 80 per cent. of the weight of the silver. The staff required is very small. With twelve workmen of all descriptions about 17 tons of ore are treated per day. The machinery is driven by steam power, the cost of wood for two engines being about £8 daily. The total cost of working, including wages, materials, wear of machinery, etc., is about £2 per ton of ore treated, or about 1s. 2d. of silver recovered.—(*Zeitschrift fur Berg-, Hutten- und Salinenwesen*, vol. xxiv., p. 264.)—*Proceedings of the Institution of Civil Engineers.*

* *Vide Elements of Metallurgy*, by J. A. Phillips, p. 650 *et seq.* Also Hague and King's *Mines of Nevada*, and Raymond's *Reports*, etc.

HYDRAULIC MINING IN CALIFORNIA.*

By Aug. J. Bowie, Jr., A. B., Mining Engineer.

BRIEF OUTLINE OF THE GENERAL TOPOGRAPHY OF THE GOLD REGIONS OF CALIFORNIA.

The topographical features of California, as demonstrated by the explorations of the State Geological Survey, are found to be exceedingly simple. For the subject under consideration three equidistant parallel lines can be used to convey a general idea of the physical geography of Central California.

A straight or "main axial line," whose course would be north 31° west, passing through the culminating peaks of the Sierra for a distance of five hundred miles, can be assumed as the western boundary of the State. A second parallel drawn fifty-five miles west of the "main axial line" will skirt the western base of the Sierra Nevada, along the edge of the foot-hills. A third parallel run equidistant from the second will represent "as nearly as possible the western base of the Coast Ranges." These parallels divide the State into three belts, namely, the Sierra, the great Valley of California, and the Coast Ranges.

"This arrangement of the physical features holds good for a length of four hundred miles in the direction of the main axial line, comprising almost the whole of the agricultural and the greater part of the mining districts."†

The section of the country which is of immediate interest to the miner is that of the western slope of the Sierra. These mountains, rising in a short distance from the Sacramento plains to elevations of over seven thousand feet, with occasional peaks ten and twelve thousand feet high, are cut by numerous deep and precipitous gorges or cañons, through whose rugged ways the immense watershed of the Sierra drains, supplying the main rivers of the State, which ultimately empty into the Pacific Ocean.

Between these cañons, ridges or divides are formed, on top of which detrital accumulations are found. This gold-bearing drift extends from Shasta in the north to Kern County in the south, the most extensive deposits occurring in Plumas, Sierra, Placer, and Nevada counties. The term *shallow placer* is applied to deposits of gravel and earth whose thickness varies from a few inches to five or six feet in depth, to distinguish them from *deep placers* or detrital accumulations found in ancient channels covering large areas, and varying from one hundred to several hundred feet in depth.

THE DISCOVERY OF THE GRAVEL DEPOSITS CONTAINING THE PRECIOUS METAL.

The pioneer miner, after working out the river bars, followed up the stream to find "the source of the gold." Its existence was discovered from slides, denudations, and breaks in channels, which subsequent explorations proved to be the ancient river system of the State, whose general course is nearly at right angles to the present river system of California.

The indefatigable prospector advancing further into the unexplored mountains again discovered gravel beds at elevations of several thousand feet above the present water-level. The streams flowing through the precipitous cañons of the high Sierra aided materially in the development and discovery of the gold fields. Their waters were soon appropriated for gold washing, and thus was inaugurated the system of mining ditches, which to-day extends over several thousand miles.

The immense gold-bearing drift inclosed between channel walls, or "rim rock," as it is called, was explored by means of tunnels driven in from bordering cañons, tapping the bottom of the deposit, enabling the extraction of the pay stratum, which was subsequently sluiced to extract the gold. This style of mining received the name of "deep placer mining."‡

Little by little the "top dirt" of these deposits, composed chiefly of light soil, clay, fine gravel, and streaks of sand, was washed off, and in places considerable money was made. Canvas hose was brought into use to convey the water over the banks for washing the dirt, and from this originated hydraulic mining. In the progress of the work strata were found composed of boulders, pebbles, quartz, sand, and various rocks cemented together, requiring the use of powder to break them up. The color of this cement was in places white or reddish, and sometimes blue.

Shafts sunk in these strata discovered the presence of gold in great abundance, and a fresh enthusiasm was thus infused into gravel mining, already on the wane, as the river bars were becoming exhausted.

THE GOLD BEARING DEPOSITS OF CALIFORNIA.

The auriferous deposits of California are chiefly confined to the western slope of the Sierra Nevada Mountains. The principal counties in which placer mining is carried on are Shasta, Trinity, Plumas, Sierra, portions of the east side of Butte and Yuba counties, also Nevada, Placer, El Dorado, Amador, Calaveras, Tuolumne, Mariposa, and Stanislaus counties. "It is here," says Professor Whitney, "that the belt of metamorphic slates and sandstones, which is peculiarly the gold bearing formation of the State, is developed to its greatest width, and least concealed from the miners' explorations by the presence of overlying non-metalliferous formations. It is here that the physical conditions have most favored the concentration of the gold in the detrital formation, so that it could be obtained by simple washing, without the necessity of mining for it in the solid rock, and perhaps more readily and more abundantly than any region ever opened to seekers after the precious metal."§

The gold deposits are found in river channels, in basins, or on flats, as isolated or rolling hills, occurring either as accumulations of gravel alone resting directly on the surface, or accumulations of detritus, consisting of gravel, sand, drift, pebbles, and boulders of all sizes covered with lava and other volcanic products. Their geological ages are Post-Tertiary and Tertiary. Quantities of fossil wood and numerous remains of land and water animals have been found in the deposits, and are being constantly unearthed as the mines are worked.

The auriferous alluvions mark the lines of ancient rivers, whose action on a grand scale was analogous to that which can be daily seen along the streams which receive the tailings from the hydraulic claims now being worked. Volcanic eruptions have in places covered these deposits with lava and tufa, hundreds of feet deep. Denudation and erosion, the companions of time, have subsequently played their parts, and later in turn has the product of volcanic activity been overlain with detritus.

These gravel channels are from a few hundred to several thousand feet wide, and they vary from the shallow placer to a drift six or seven hundred feet in depth. Their richness in gold differs in general, as well as in particular, in the many parts of the State.

ON INDICATIONS OF GOLD.

Ferruginous-colored spots, so well marked in "upper or top gravel," are not always as productive in gold here as is generally found to be the case in the gold alluvia of the Ural Mountains. A black sand, composed chiefly of glancing grains of magnetic iron, generally accompanies the precious metal, though it does not indicate its presence.

Dr. T. Sterry Hunt, speaking of the erroneous impressions which prevail in reference to the presence of black sand in auriferous alluvions, very appropriately remarks that "similar black sand residues, consisting chiefly of various ores of iron (sometimes oxide of tin and other minerals), may be obtained from the washing of almost all sands and gravels derived from crystalline rocks, and that the occurrence of a black sand, therefore, in no way indicates the presence of gold. When, however, this metal is present in a gravel, it, from its great weight, remains behind with the black sand and dense matters in the residue after washing."*

THE DISTRIBUTION OF GOLD IN GRAVEL DEPOSITS.

It is not unfrequently stated that it is from the washing of the entire banks that the gold is to be expected, it being disseminated throughout the entire deposit. That deposits are or are not auriferous for their entire depth will not be discussed; but that gold is proportionately diffused throughout the detritus, so that it could all be considered as "pay," is denied by experience and facts, as proven in California and other parts of the world.† It is owing to that circumstance that miners have coined the expression "pay dirt," which means that stratum or those strata which contain the bulk of the precious metal.

It is true that in some districts gold is found in sufficient paying quantities thirty to fifty feet above the bedrock to hydraulic, and in some shallow‡ banks gold is disseminated through them. At San Juan and North Bloomfield the gold is more or less scattered throughout the deep banks, and diggings near Forest Hill, Placer County, have yielded profits twenty to sixty feet above the bedrock.

Experience has proven that the quantity of gold found in "top gravel" is insufficient to warrant any large investment based solely on its value. Under exceptional conditions and circumstances the upper strata have in some cases yielded handsome returns, but on the whole the general results have been anything but fortunate.

CONCLUSIONS REACHED AS TO THE DISTRIBUTION OF "PAY DIRT."

It is, therefore, a well established fact that it is not from the washings of the entire bank that the pay dirt is obtained, but chiefly from that stratum or those strata § which are in most cases within eight or ten feet of the bedrock.‖ Where the bedrock is of slate upturned on its edges, the gold frequently permeates ** it one or two feet. It also occurs in thin streaks of cemented gravel scattered here and there in the alluvial deposits, and not unfrequently a fine lamina gold is found in the grass roots.††

As illustrating some of these facts, the gold alluvia found near and along the banks of the Tuolumne River, Stanislaus County, present some striking examples. The pay dirt in the Chesnan Claim is confined to within six feet of the bedrock, whilst in the Sicard Claim, situated about six hundred feet south of it and across a ravine, with banks from twenty to forty feet high, the gold is more generally disseminated as long as there are no sand strata, but whenever the sand strata appear the pay is confined to near the bedrock.

THE ALLUVIA OF PESHANKA, SIBERIA.

Sir Roderick Murchison, in describing the gold alluvia of the rich mine of Peshanka, near Bogoslofsh,‡‡ says: "Most of the gold has been extracted near the center of the detrital mass, whose maximum thickness is about seven feet, and which is clearly divisible as elsewhere into two parts, viz., overlying clay and shingle, and auriferous sand beneath.

THE DEPOSITS OF MINAS NOVAS AND GERAES, BRAZIL.

At Minas Novas, in the Province of Minas Geraes, Brazil, the "greater part" of the gold is in a deposit called cascalho, which adjoins the decomposed bedrock. The cascalho is a conglomerate, composed of rounded quartz pebbles of various sizes, which have been cemented together with ferric oxide. "To this conglomerate the search for precious metals has been chiefly confined. Over this gravel lies a mass of red drift, varying in thickness from a few inches to fifty feet."§§

TO BE CONTINUED.

FREE AMMONIA IN CAST STEEL.—In the *Comptes Rendus Hebdomadaires des Seances de l'Academie des Sciences* for February, M. Reynard says that, on breaking up ingots of steel made on Ponsard's system, he noticed a very decided smell of ammonia. The odor was accompanied by a slight hissing, very distinct on holding the ingot to the ear. On covering the fracture with soap-water a froth was produced.

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* A paper read before the American Institute of Mining Engineers, at the Wilkes-Barre meeting, May, 1877.

† See vol. i. p. 5, *Geological Survey of California*, J. D. Whitney, State Geologist.

** Deep placer mining is now carried on in those sections of the State where the rich deposits are covered with thick beds of lava, rendering hydraulic mining impracticable.

§ *Geology of California*, vol. i. p. 214, J. D. Whitney.

* *Geological Survey of Canada, Report of the Progress*, 1863–66, p. 86.

† Deposits between Tagilsh and Ekaterin, *Erzlagerstatenlehren*, Von Cotta, p. 556. See article on "Gold Deposits," by M. A. Selwin, Geologist of Victoria, *Quarterly Journal Geo. Soc.*, 1858, p. 583. See "Gold Deposits of Jaraqua," *Annales des Mines*, 1817, vol. ii. p. 202. See gold deposits of Santa Rita, Contagallo, and Minas Novas, *Geology and Physical Geography of Brazil*, Hartt, pp. 50, 51, 159, 160. See account of the gold fields of Yesso, "Mineral Wealth of Japan," Henry S. Munroe, E. M., *Transactions American Inst. Mining. Engs.*, June, 1876. See ENGINEERING AND MINING JOURNAL, December 2, 1876.

‡ See description of the auriferous deposits at Morse's and Growler's Creeks, *The Gold Fields and Mineral Districts of Victoria*, P Brough Smyth, p. 84.

§ On the subject of the relative position of gold in deposits, see report of Mr. Stutchbury, Government Geologist of N. S. W. See Von Cotta, *Erzlagerstaten*, vol. i. p. 101.

‖ See account of the gold deposits at Nation's Gully, New Gully, Never Mind Spur, Beechwood District, also workings at Balaarat, *The Gold Fields and Mineral Districts of Victoria*, P. Brough Smyth, pp. 81, 82, 87, 131, and 173.

** *Vide* "Siluria," p. 456, vol. i., *Russia and Ural Mountains;* p. 487, "Diggings at the Soimanofsk Mines," Murchison; also *vide* pp. 86, 106, "Gold Deposits in Woods Point District and Windlass Hill," *Gold Fields of Victoria*, P. Brough Smyth.

†† In reference to the occurrence of gold, the following note, taken from the ENGINEERING AND MINING JOURNAL, February 10, 1877, p. 94, relative to the discovery of pay gold in the New South Wales coal measures, will be found interesting. Mr. C. S. Wilkinson, F. R. S., writes from the Geological Survey Office, Gulong, under date of November 25, to the Mining Department, as follows: "During my examination of the Tallawang Goldfield Reserve, I observed the important fact that the gold found in tertiary alluvial deposits at the old Tallawang and Clough's Gully diggings has been chiefly derived from conglomerates in the coal measures. These conglomerates are associated with beds of sandstone and shales containing the fossil plant of our coal measures, the Glossopteris. . . . This is the first time that gold has been noticed to occur in payable quantity in the coal measures in the colony, and it is not unworthy of remark that we here possess one of the most ancient 'alluvial' deposits in the world."

‡‡ *Russia and Ural Mountains*, vol. i., p. 482.

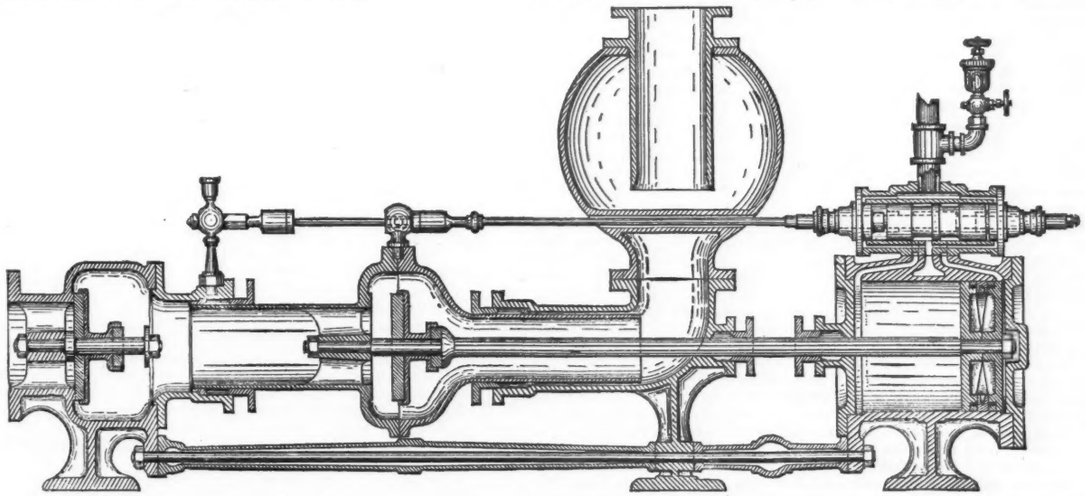
§§ *Geology and Physical Geography of Brazil*, Hartt, pp. 159–60.

DOUBLE-ACTING TUBULAR PLUNGER PUMP.

Manufactured according to Lorenz's Patents, by Wm. E. Kelly, New Brunswick, N. J.

The accompanying sectional cut shows some peculiarities of construction for which great advantages are claimed.

The pump is no larger than the ordinary double-acting plunger pump, but the valves of it are so constructed as to allow the water to pass through them without an increase of velocity or friction, and will also permit the passing of liquids that would impede the motion of other pumps. It is thus admirably adapted to the pumping of heavy fluids, gritty water, etc. The pump has a hollow tubular plunger that operates in cylinders twice as large at the inlet as at the discharge end. The stuffing boxes and glands through which the plunger passes are larger. The rod of the steam cylinder piston passes through the tubular portion and is secured to the plunger on the inside, where there is an enlarged space having a valve with a water passage larger than the area of the larger portion of the plunger. Each extremity of this tubular plunger fits into a stationary tubular piece having a stuffing box and gland. The stationary piece at the left of the plunger (as shown in the engraving), to whose opening on the end opposite to the plunger the suction pipe is connected, with the stationary piece on the right connects with the air-barrel and delivery.



The pump operates as follows: in moving from left to right the valve in the larger portion of the plunger will be sealed or closed, thus closing the communication between the large and small sections. The plunger moving forward to the right, the space between the two valves meanwhile increasing, the valve in the stationary suction chamber is thrown open by the atmospheric pressure, and the fluid enters between the valves in the space made by the forward movement of the larger plunger. While this space is being filled, that created by the smaller end of the plunger and the stationary delivery piece is being decreased, the fluid passing through the delivery chamber. This stroke completed, the return stroke is now from right to left, and the space between the two valves—the suction chamber and plunger chest—beginning to decrease, the fluid will close the valve in the suction chamber and open that of the plunger chest, the fluid passing through the latter valve.

As will be at once understood, the construction of the pump chamber is peculiar, and is chosen in order to avoid the difficulties common to the ordinary double-action pumps with crooked water ways. The down stroke raises no water, and the duty of forcing the water when raised is divided between the up and down strokes.

The pump is simple in construction, and is said to give great satisfaction in operation.

DRY ORE CONCENTRATION AT THE MANHATTAN SILVER MILL, NEVADA.*

By A. Trippel, Mining Engineer, New York.

The following statistical figures, showing the working results of the Manhattan Mill at Austin, Nevada, in 1875, were taken from the books of the Manhattan Silver Mining Company, by kind permission of its agent, Allen A. Curtis, Esq. The peculiar character and great richness of the Reese River District ores worked in this mill are well known and need no new description. It may be well to call attention to the fact that the fuel used for the Stetefeldt furnace in this mill is wood and charcoal combined. Of the whole wood and charcoal consumed about nine cords of wood are used daily for the motive power, and a small quantity of charcoal for the melting furnace and assay room; the remainder is used for the roasting of ores. It should also be mentioned that the cord of wood costs $12, and charcoal 30 cents the bushel, while labor is generally paid $4 per shift.

At the present time the expenses of milling the ore must be less, as the company now has its own iron foundry on the spot, and an extensive, well-appointed repair shop. With regard to the percentage of silver produced, there is no doubt that the Manhattan is ahead of any other mill in Nevada, and its working results may, therefore, be the more interesting.

The most important feature in Reese River District was the introduction of "Krom's" dry separation or concentration of ore at the Manhattan Mills. It has already been stated in last year's report that previous tests with Lander Hill ores in Krom's establishment at the Sheba Mine, near Unionville, had given satisfactory results, and it was expected that equal results would be obtained at Austin with the same ore. These results (of which I give the details in the appended table) were a total product of concentrations, including dust, equaling about 83 per cent. of the assay value of the worked ore. The ore which was used on that occasion was a mixture from the three principal mines then worked by the Manhattan Company, having a mean assay value of $120 per ton. Of this mixture a little over five tons were treated. The mineral in the ore consisted of sulphurets of iron, copper, lead, fahl-ore, antimonial silver, and ruby silver, finely distributed through the quartz, yet the most particles were easily visible, and could be well distinguished from each other. The results being as favorable as could be expected, it was decided to construct works with a capacity to treat fifty tons of ore per day, and during the winter the machinery, or most of it, was constructed in New York, and erected the following summer in the building formerly known as the "Boston Mill," and expressly purchased for that purpose by the Manhattan Company. The main part of this building is a massive structure 116 by 44 feet, with a large extension on the east side, and spacious rooms for steam engine and boilers. The motive power was furnished by two engines, one of 80 horse-power for the crushing, and another of 15 horse-power for the concentrators proper. The first was partly rebuilt by Booth & Co. of San Francisco from the engine on hand in the mill building, and was provided with the best modern improvements; the smaller one was an ordinary engine. The arrangements for feeding the boilers were exceedingly well made, and everything done to economize fuel, which at Austin is very expensive. The machinery for crushing and concentrating was distributed mainly on two floors of the main building, with a loft and screen tower, with bins for ore and tailings, and the main portion of the screening and sizing arrangements. The building being on a hillside, it was arranged that the ore be dumped high up on a platform in the rear of the same, and delivered through chutes on the second floor next to the ore breaker—one of Blake's largest size.

From the ore breaker the ore went through a chute to the first set of steel rolls below, and subsequently through another chute into an elevator, raising it again to the second floor to a rotary screen, which separated all above a certain size from all that was finer, delivering the latter to a second and general elevator, while the coarser part went to the second pair of steel rolls on the second floor. This rotary screen had at one of its ends a very coarse, three-quarter inch, sieve, for the purpose of throwing out any larger bodies, amongst which were generally bits of steel from mining tools. The ore which passed the second rolls descended to another rotary screen, and finally to the third rolls, from which all was elevated some seventy feet to the top of screen tower. The screens in the tower were four: one having 16 meshes, the next 25, the third 50, and the fourth 100 meshes to the linear inch. All too coarse to pass the first went back down to the third crusher; the balance was screened into three sizes on its way down, and each size was received in a separate ore-bin on the third floor or loft. Connected with the crushing, screening, or sizing apparatus were branches of large pipes, leading to an exhauster, which carried the dust into a large dust chamber, situated immediately under the roof. The concentrators proper received their charge continuously from the different bins through wooden tubes. The concentrations from

1875.	Pounds Ore Reduced.	Assay Value.	Bullion Obtained.	Value Tailings.	Bullion and Tailings.	Amount Lost.	Average Mill Test	Per cent. of Bullion.	Per cent. of Tailings.	Per cent. of Loss.	Per cent. of Chlorination.	Wood Consumed.	Charcoal Consumed.	Pan Charges.	Tons Crushed Per Hour
January	1,126,000	$100,364 29	$87,036 37	$10,359 20	$97,395 57	$2,968 72	$178 23	86·72	10·6	2·67	89·8	$628	$1,800	$2,000	1,592
February	893,500	78,296 62	70,120 38	7,795 78	77,916 16	380 46	177 93	89·55	10·2	0·24	90	363	3,500	1,787	1,731
March	1,236,250	127,602 00	111,087 37	12,387 23	123,474 60	4,127 40	203 20	87·05	10·3	2·64	90·6	528	4,727	1,719	1,816
April	117,500	116,669 94	106,654 69	9,067 93	115,722 62	947 32	209 94	91·41	7·7	0·884	90·8	483	4,025	1,650	1,839
May	966,000	105,277 64	94,613 13	10,413 48	105,026 61	251 03	209 81	89·87	10·2	.....	91·6	436	3,840	1,785	1,898
June	1,167,000	137,087 70	114,997 89	12,965 37	127,963 26	9,124 44	230 04	83·88	9·4	6·71	92·8	453	4,700	1,690	1,885
July	1,136,500	130,935 71	111,874 53	11,688 90	123,563 43	7,372 28	227 04	85·44	8·9	5·65	92·3	587	4,964	1,716	1,800
August	959,500	94,384 64	81,935 72	9,105 75	91,041 47	3,343 17	196 12	86·81	9·7	3.48	91·8	461	4,931	1,586	1,719
September	1,120,750	110,256 54	96,907 49	10,495 82	107,403 31	2,853 23	198 07	87·89	9·7	2·40*	91·5	463	5,400	1,729	1,916
October	1,255,750	139,871 26	120,435 49	10,868 49	131,303 98	8,567 28	221 35	87·03	8·4	4·56	93·8	458	6,300	1,794	2,137
November	1,094,500	110,401 10	96,178 62	9,303 85	105,481 87	4,919 23	202 01	87·11	8·8	4·08	92·6	413	5,230	1,852	2,130
December	1,176,500	122,818 20	112,812 50	8,970 81	121,783 31	1,034 89	205 78	91·85	7·7	0·44	94	451	5,100	1,761	1,890
Totals & averages	12,249,750		$1,204,654 18					87·67			91.8				

Cost of Milling.	
Labor	$8 68
Fuel	12 78
Supplies	2 02
Quicksilver	3 03
Salt	2 56
Office labor	0 92
Castings	0 83
Hauling	0 90
	31 72

* From the forthcoming report of Dr. R. W. Raymond on the *Mineral Resources West of the Rocky Mountains*, 1876.

eight machines of three sizes fell into hoppers, and from these into three concentrators on the lower floor, where they were reconcentrated, while the tailings fell on endless belt-carriers, and from there to elevators and bins, arranged to receive each sort of tailings, from day or night work, separate. From these bins they were carried off outside. The sampling of the tailings and the different sizes of ore, and the dust (which comprised all ore finer than passed a hundred-mesh screen), were done in the most careful manner, so that the assays represent the actual results of every day's and night's work. I should mention that the *dust* had to be taken as it was, as any further concentration of such fine stuff was entirely impracticable.

The whole machinery was unquestionably of fine make, and on the whole well arranged. In my opinion, the high tower for screening it was objectionable, being, if not inaccessible, at least laborious to reach in its upper parts, and especially because the whole screening machinery was out of sight, and not fully under control in case of accidents.

Neither were the arrangements to prevent the dust as complete as could be. In the successive crushing by a breaker and three steel rollers, care should be taken that right from the beginning no stuff should pass the *next* crusher which is fine enough for the *second* ahead. This idea, well carried out, not only prevents much dust, when the chutes and screens are well boxed, but the forming of impalpable powder, or at least very fine ore, which cannot be concentrated any further. The regulation of the large Sturtevant exhauster is not an easy task at all; either its force is not sufficient to suck up all the dust when the place becomes intolerably dusty, or it is too much and the dust is carried far off through the opening at the farthest end of the chamber. The steel rollers of Mr. Krom are exceedingly well constructed, and many parts are of cast steel; the diameter of the rolls was twenty-six inches, with a tyre two and a half inches, made of cast steel. They are undoubtedly the finest crushers ever made, well proportioned and very powerful. I think, however, that their diameter should diminish as the stuff becomes finer, so that, for instance, the present diameter be maintained for the first pair, about twenty-two inches for the second, and but eighteen inches for the third pair. I am fully convinced that such a diminution in size would be most beneficial where the ore has to be crushed fine. The face of the rolls was fifteen inches, and the tyre composed of two pieces, joined in the center, it having been found difficult to make cast steel tyres of the right temper as much as fifteen inches wide. There was a marked difference in the behavior of the different steel tyres; some, thought to be too soft at the beginning, stood the best, and worked off the most uniformly; others, which seemed to withstand the hard quartz well at the start, showed themselves to be brittle, and the edges broke off on some of them. It is not a too hard metal which is wanted; a medium temper and great toughness seem to be most desirable. The wear and tear of the three pairs of rollers, after the crushing of over 1,200 tons of quartz, averaged about 3-16 of an inch on the surface; they were turned down, but it was found necessary to use titanium steel tools to do this successfully. The gear being so arranged as to suit a continuous decrease of diameter, it is not doubted that these rolls would crush over 8,000 tons before the tyre should be renewed, and, where the gangue is not too hard, much more.

The arrangements to prevent fractures consisted essentially in the use of powerful steel springs, behind which were breaking cups, which not unfrequently proved their usefulness, and likewise the danger of being in too near proximity to them. The third pair of rolls, for fine crushing, should, in my opinion, have no elasticity, but be screwed tight, or nearly so, provided the feeding is well regulated, and care be taken that no larger bodies than those intended come between the rolls. Most frequently stoppages occur by over-feeding, not so much by the coarse stuff as by the fine. The velocity which Mr. Krom gives to his rolls is rather excessive, and would puzzle such authorities as Rittinger. While I believe in a high velocity for small rolls and fine crushing, I hold a more moderate speed for coarse work preferable. A speed uniformly at 50 revolutions seems rather too high.

The speed for the rotary screens was variously tried and deserves all attention: while a too sluggish movement permits too great accumulation of ore, and in consequence an imperfect screening, too high speed throws the stuff violently from one face to another without giving it time to pass the meshes. It was found that sixteen to eighteen revolutions were about most satisfactory.

The material subjected to Krom's dry concentration was not the same as that used on the preliminary trial. It was merely waste-ore from a few mines—ore in which the mineral was so exceedingly finely disseminated that it appeared rather as a light grayish streak, developing under the microscope an aggregate of minute particles of sulphurets. There was a steady value in that part of the ore, an assay value which might have averaged perhaps $9 per ton, and it was nearly the same whether the *whole* assay value of the ore was $15 or $40, the increase in the value of the ore being caused by more coarse (though still fine) particles of mineral. This fine part of mineral was as much as lost; although our coarsest size was already finer crushed than most ore for concentration is intended to be crushed, the particles showed plainly under the magnifier these grayish colors undetached from the more white quartz, and not sufficiently different in specific gravity to permit any successful separation. This fact will, I think, sufficiently explain why the tailings of the *lowest* grade were not much different from those of the higher grade ore, understanding that the two figures given above represent the two extremes in this case.

Other obstacles in the way of success were the absence of any drying apparatus, without which, as is well known, neither a stamp mill nor a crusher, much less various sets of fine screens, can work satisfactorily. Some of the waste ore was delivered not many hours after it was hoisted from the mines, and in some instances thoroughly wet. In addition to that, no care was taken to separate the country rock—in this case more or less decomposed granite—from the quartzose ore, which not only increased the dust considerably, but caused more difficulties in the screening.

From these facts it will be seen that this test of dry concentration was, to say the least, an uncommonly severe one, and would have been the same for any method of concentration.

Mr. Krom's concentrators proper are decidedly well constructed, and admit of the finest variations of movement in point of speed and strength, according to the different character of the ore; still there are some details which, in my opinion, could be materially improved. The greatest difficulty, however, seems to me to be the screening and the separation of all dust or dust-like ore before it passes into the concentrators and there causes an imperfect working. Even if that dust *is* separated, its disposition without a reduction work at the spot will be embarrassing and cause more or less loss. In this case, the dust—including all that passed a screen with 100 meshes to the linear inch—amounted to about 17 per cent. of the worked ore, and its average assay value was about 48 to 50 per cent. above that of the value of the ore. It should be said that samples of dust, taken at a distance from the surroundings of the building, assayed the same as those taken from the nearest spot in the dust-chamber, proving how eminently *fine* the mineral particles were. All that class of product was sacked and milled without any other preparation than roasting in the Stetefeldt furnace.

A most interesting comparative test with wet concentration was made side by side with the dry process. A well-constructed automatic working triple jig was used; the water, being scarce, was continually pumped back in the reservoir, and as the ore was comparatively free from dust, no difficulty was experienced in doing so. The general result was, that the product was equal to that made in three of Krom's separators; the average tailings were a trifle poorer, but the concentrations were by far lower in value than in Krom's machines, and my impression is that the work done by the latter is preferable for that class of ore.

The average assay values for wet and dry tailings, under precisely the same circumstances and the same ore, were as follows during six days' regular work:

Average dry tailings.	Average wet tailings.	Average dry tailings.	Average wet tailings.
$12 55	$11 76	$10 20	$8 64
11 76	11 76	15 71	9 16
11 78	10 59		
10 98	9 43	Mean, $12 16	Mean, $10 22

A synopsis of the general results of three months' working will show as follows:

In 61 working days were crushed and concentrated	1,210 tons
Average crushed in ten hours	20 "
Consumption of pinewood per day	2¼ cords.
The average assay value of the ore	$29 16
Average assay value of dust-like ore	46 00
Of this dust was produced about	17 per cent
Of real concentrations	4·9 "
Assay value of concentrations varied between $108 and $560, and averaged approximately	$250

A comparison between concentrations made by dry and by wet process will show the following values:

Dry Concentrations.		Wet Concentrations.	
Coarse	$141 35	Coarse ore, 1st box	$53 41
Medium	442 96	2d box	157 08
Fine	251 33	3d box	34 56
		Coarse ore, 1st box	72 26
Coarse	$147 63	2d box	196 34
		3d box	62 83

The value of the combined product, consisting of the concentrations proper and the dust-like ore, which was delivered as product, amounted to about 56 per cent. of the assay value of the ore received; the loss, therefore, was considerably larger than that sustained at a previous trial made with a better class of ore. I have already called attention to the fact that there was no proportionate difference in the value of tailings when the ore was either $17 or $40, as the following figures will show, these figures being computed from the daily working during 61 days:

Ore averaging from	Tailings were	Ore averaging from	Tailings were
$15 to $18 85	$10 98	$28 to $30	$13 49
20 to 22	12 95	30 to 33	12 93
23 to 24	12 38	33 to 36	14 44
25 to 26	11 79	36 to 39	14 26
26 to 28	12 86	39 to 50	14 49

The entire cost of crushing and concentration per ton of ore, including hauling from the mines, varied between $4.50 and $5. It should be said that this estimate includes the *first* month of working, during which many delays occurred and numberless difficulties had to be overcome. The financial result for the Manhattan Company, although not entirely satisfactory to them, was, nevertheless, very fair, inasmuch as even that class of ore which could not have been worked without considerable loss in the usual way, paid its own way, was made productive, and left a small profit. I am satisfied that the concentration of better ore, or what is called second-class in Austin, would prove of great advantage, while admitting that the so-called dump ore, which was exclusively worked, will never give the results expected by the parties erecting the works, nor will any other method give better results. An important fact which was developed in this trial is the apparent practicability and advantage in substituting a systematic crushing by steel rolls for stamp batteries. If only the crushing had been the object in this case, it would not have cost over $2 per ton to make pulp fine enough to pass a 100-mesh screen. With every possible effort to avoid making such fine ore, we nevertheless produced 17 per cent. of it, much to our dislike, and crushed, say, 20 tons of ore in 10 hours, with but two cords of wood at the highest calculation, the rest being consumed by the concentrators and screens. When it is considered that the ore was delivered, partly in large lumps, being mostly very hard quartz, together with the small wear and tear compared with stamp mills, it will speak favorably for the adoption of crushing by rolls.

Another interesting feature for mill-men has been well proven by this trial: it is the substitution of the exhaust-fan in the place of the finer sort of screens. Not that this idea is new, but I think it has never commanded the attention it deserves from mill-men. Screening through fine screens is, at best, a very imperfect and troublesome operation, and expensive at that, while I have fully satisfied myself that a proper application of the exhaust-fan would produce a uniformly sized pulp with far less dust and at a much less cost.

THE UTILIZATION OF OLD BESSEMER RAILS AND CROP-ENDS.

By E. D. Meier, St. Louis.

The question has often been propounded, "What is to be done with the large quantity of Bessemer steel which will come into the market before many years in the shape of worn-out steel rails?" Akin to it is also the problem of the most economical absorption of the waste at steel rail mills, commonly known as "crop-ends."

Though attempts have been made with tolerable success to melt over again a small portion of these with the pig in the cupola, they only solve the question for a trifling percentage. Many mill and forge men have tried to weld this steel scrap, with, however, very limited success, and probably in no case heretofore in sufficient quantities to have any economic value.

To Mr. O. W. Meysenburg, of this city, is due the credit of having found a practical solution of the problem, by a simple process, for which a patent was granted him March 13, 1877, after a prolonged and searching investigation of the case, in all its bearings, by the Patent Office.

Among other things, proof was required of perfect weld, and of the nature of the product, as steel capable of tempering. Both were given in a number of instances, and taps and chisels, made of the welded steel, tempered and used till worn out.

Mr. Meysenburg's process requires no flux or admixture of any kind, but consists simply in careful and slow heating up to a certain point, designated as "a soft white," or "a slightly yellowish white heat," and given by C. Hartmann as about 1,200° Centigrade, and then *welding the pile in the first pass* of rolls so adapted to its shape as to compress it thoroughly in all directions towards its center line.

An ordinary heating furnace will answer for the purpose. At the works of the St. Louis Bolt and Iron Company, Mr. Meysenburg uses one furnace especially arranged for this work, with a short neck, low bridge, and light draft, and two others just as constructed for heating piles of iron. Since April of this year he has manufactured of this welded Bessemer steel :

	Tons.
Plain fish plate	67
Angle fish plate	96
Buggy tire, 6 sizes, from ¾ × ⅛ inch to 1½ × ⅛ inch	40
Wire rod	43
Promiscuous steel, for machinery, etc.	25
Total	271

About one-half of the raw material was in crop-ends, the other half in English steel rail sent in as worn out. Though undoubtedly capable of receiving tool temper, Mr. Meysenburg does not claim for his steel any quality for such uses as require very hard and keen edges. The writer of this saw, however, a lot of bars ordered for horserasps just turned out.

A small quantity of heavy street rail made by this process is undergoing a practical test in the track of the street car line on the east approach of the St. Louis Bridge. A number of tests made on fish joints, built up as in practice, by Messrs. Flad & Pfeiffer, civil engineers, with the large testing machine used at the St. Louis Bridge, gave the following results :

Description of Joint.	Distance of supports	Permanent set at	Buckled or broke at
	Inches.	Tons.	Tons.
2 plain steel plates 22 × 2 × ⅛ inch	16	24	.....
2 plain iron plates 22 × 2 × ⅛ inch	16	19	28⅛
2 steel angle plates 22 × 2 × 9-16 inch	16	32½	46
2 iron angle plates 22 × 2 × 9-16 inch	16	24	36
2 ribbed steel plates, rib 27-32 inch, cut ⅝-inch	16	24	37
2 ribbed iron plates, rib 27-32 inch, cut ⅝-inch	16	19	25
1 angle and 1 double angle plate of steel	16	33	.....
1 plain steel fish bar joint	14½	27¾	.....
1 " " "	14½	28	.....
1 plain iron fish bar joint	14½	16¾	.....

Punching tests, to show density, gave as strains required to punch a 1 inch hole in a half inch plate, 36 tons for iron and 54⅛ tons for this steel.

In view of the fact that this Meysenburg process has become a regular branch of manufacture at the St. Louis Bolt and Iron Company, and is capable of unlimited extension, the question as to "what is to become of the old steel rails" may be considered as definitively answered.

JULY 18, 1877.

ON MANGANIFEROUS CAST IRON.

By L. Troost and P. Hautefeuille.

Translated from the *Comptes Rendu* of April 5, 1875, for the ENGINEERING AND MINING JOURNAL, by Chief Engineer Isherwood, United States Navy.

Manganiferous cast iron (spiegeleisen) has, when flowing from the blast furnace, some peculiarities which at once distinguish it from ordinary cast iron; for, while the latter throws off sparks during the cooling of the metal and disengages gaseous bubbles only intermittingly, the former, prepared from pure minerals, emits in flowing from the furnace and up to the instant of solidification, so great a quantity of combustible gas that a sheet of it burns continuously over the liquid metal. During solidification this disengagement takes place by numerous jets. Both the gaseous sheet and the jets burn like hydrogen, and have none of the appearance of flame containing carbonic oxide.

These phenomena can be reproduced in little and under conditions in which they are easily observable. In a reverberating lime furnace arranged as for the melting of platinum, and having its bottom raised to a red heat by the flame of a blow pipe fed with illuminating gas and oxygen, is introduced piece by piece about 0·44 pound of spiegeleisen, the reducing flame being meanwhile maintained. When the fusion is complete and the metal very hot, there is added 0·22 pound of spiegeleisen, which melts rapidly without becoming sensibly refined. If the metal, which is now very hot and very fluid, be uncovered, it appears as brilliant as silver, and is played over by a short flame slightly luminous, which is easily seen by placing the eye in the plane of the furnace. At intervals the liquid metal emits gaseous bubbles which ripple its surface, and their flame is not distinct from that of the gaseous sheet or layer which burns continuously at a slight distance above this surface. At the instant of solidification a real sky-rocketing takes place with abundant disengagement of hydrogen.*

Manganiferous cast iron still retains after solidification a much greater quantity of hydrogen than ordinary cast iron. Thus, in heating about 1·1 pound of each of the two kinds of cast iron to 1,472° F. in a vacuum, the following results were obtained :

	Charcoal cast iron.	Spiegeleisen.
Carbonic acid	0·6	0 0
Carbonic oxide	2·8	0·0
Hydrogen	12·3	27·0
Nitrogen	1·0	2·5
	16·7	29·5

The carbureted manganese obtained by reducing its oxide with charcoal in a lime crucible also absorbs, when heated to redness and left to cool in a current of hydrogen, a greater quantity of that gas than is dissolved by iron containing an equal quantity of carbon.†

From these results it will be seen that the presence of manganese in cast iron greatly increases the solubility of hydrogen in the metal, and lessens or even prevents that of carbonic oxide.

* The same metal after prolonged refining to carry off by oxidation the principal part of the manganese, presents phenomena quite different and resembling those observed in the flow of ordinary cast iron. During the cooling of the refined liquid metal, the incandescent gaseous sheet above described is no longer seen ; only some gaseous jets are observed, which appear principally at the moment of solidification and burn with the blue flame of carbonic oxide.

† The determination of the volume of hydrogen absorbed is made in the dry vacuum. The employment of water deprived of air can no longer be thought of, because manganese, even when compact, decomposes it at ordinary temperatures like finely divided pyrophoric iron. The fact has been established that pyrophoric iron deprived of its condensed hydrogen by the vacuum at a red heat decomposes water at 59° F.

LECTURES ON MINING.—No. XLVI.

By Prof. W. W. Smyth, M. A., F. R. S., Royal School of Mines, London.

We have now to observe some of the improvements in the raising of the mineral which have taken place in the last half century. A very important improvement was made by the German miners at an early period by guiding the kibbles in the shafts. Where the shafts were perpendicular, it was very frequently the case that no actual conductors were put in, but the interior of the shafts were made as smooth as possible. In many of the collieries it was the case that the interior of the shaft was so thoroughly lined with smooth plank that the corve would slide down it with very little friction ; and if there were separate compartments for each corve, a great speed could be obtained, but where two or more corves were in one shaft great complications and delays occurred by mishaps as they were passing. Guides were probably first put in the incline shafts of Germany where the underlie was considerable, and they consisted simply of a piece or pieces of wood, forming a kind of inclined plane on which the wheels of the kibble could run. These may be seen brought to high perfection in some of the Saxon mines, and they have been introduced into the improved shafts in Cornwall. The carriages employed for use in these cases are what are very improperly called "skips" in Cornwall. One variety of these is usually a square box of metal (of wood in Saxony), with a door at the side, fastened by a simple bolt, and a sloping bottom, so that when brought over a wagon at the surface, and the door opened, the material readily falls out. This runs on wheels on the inclined plane. The plane consists of a couple of longitudinal pieces of timber, bolted to transverse pieces across the shaft, with some arrangement for holding the two fast. In the case of the collieries guiding has been a matter of very recent introduction. Mr. Curr, of Sheffield, was long before his time when, in the end of the last century, he proposed the use of guides, for even as late as 1835 Mr. George Stephenson expressed himself doubtful whether such a plan was necessary. But from 1835 to 1840 they began to be employed in the North, and now there is scarcely a pit in these districts where guides and conductors are not employed. Most commonly the guides are of wood, pine wood being very largely used. In a narrow pit, if the width of the pit is such as can just be conveniently occupied by the cage, the guides will be longitudinal pieces of wood attached to the framework, but more usually they are attached at convenient length to buntons, or cross pieces. These guides may be 4 inches by 3 inches in section, or be lighter or heavier. In a well constructed shaft it is found that a couple of these bars are sufficient to steady the cages. A plan came into use early in Lancashire of fixing to the upper part of the shaft frame, and to the bottom of the pit, wrought-iron rods, usually screwed together in lengths, a ring on the cage passing over these guides, and these had the subordinate convenience of conveying the signals. Another plan is to have iron T-rails down the shaft spiked to the cross buntons ; or, again, instead of the wrought-iron rods, iron wire-rope has sometimes been employed. These ropes can be kept taut by means of screws, or by attaching a weight of a ton or two at the bottom, rings from the cage run over them, and they are found to answer their purpose exceedingly well.

If we turn next to the cages themselves, we may consider, in the first place, the water balance which is applied in the case of two parallel pits close together, or to two divisions of the same pit. The rope is connected at the surface of the ground with a large wheel, to which is attached a powerful brake apparatus. The cage then consists of two divisions, an upper staging on to which the wagon can be run, and a lower compartment which is made to contain water. The caging, which is now at the surface, is intended to go down with the empty wagon against the full one to come up ; accordingly, water is run into the lower compartment till the whole weight exceeds that on the other side, and the cage begins to move downwards. The downward movement is regulated by a man at the wheel using the brake. As soon as the cage reaches the bottom it strikes against a stone, which raises a valve in the lower part, and allows the water to run out. Then the same arrangement is repeated with the other cage. This is an extremely cheap way of dealing with water power, when you are able to let off the water by means of an adit level, and that is the condition which usually obtains in the South Wales districts where the method is employed. And even in cases where there is no adit level, and where the water has to be pumped up again, this method is sometimes employed, from the fact that pumping engines have advantages over and are far in advance of winding engines. Nevertheless, this method is doomed to disappear, in the face of the improvements in winding, and as the circumstances become more disadvantageous. Watt's engines were at first used only for pumping, but within the last half century variously arranged engines have come into play for winding. Engines with horizontal cylinders are largely used, and such have sundry conveniences, as the facility with which they can be examined, the absence of the necessity of building up tall engine-houses, the mechanical advantage of having the motion always in one direction, whereas, with the beam engines, there is a loss of power at each alteration. Not that the horizontal engines have all the advantages; vertically placed cylinders, especially with double cylinder engines, are largely used, more especially in the French and Belgian mines, and there is one point about them of very great importance as compared with engines of a former day—that they work directly on the axle of the drum without any gearing. In the collieries, where we have a great depth, large pits, and great strength of rope, these drums attain very large dimensions ; where cylindrical drums are employed, they have sometimes reached from 18 to 26 feet diameter. Every point about them has to be most carefully considered, since half a stroke of the engine brings the load through a very great distance in an instant. Near the top and bottom of the cage small pieces of iron are placed to clasp the guides, and in order that they should not become wedged, they are made to curve somewhat outwards. In a simple cage, intended to carry one or two buckets or tubs, we find these parts—a framework of wrought-iron, with usually a short chain attached to it ; an iron or wooden floor, on which are rails for the tub to be run on to ; and attached to the framework above and below will be the sliding pieces which embrace the guides (usually on three sides). According to the size of the shaft, and the nature of the tubs, it may be most convenient to place them side by side, more usually end to end, in this latter case having the convenience that on reaching the surface the man can push them out at once by the empty tubs that are to go down. The cages may have more than one floor, many have two decks, or, as in some Belgian cases, as many as six decks, each for a single tub, the shaft being narrow. For cages with more than one tier there should be separate stages, both at surface and below, from which to load and empty each tier, to avoid the inconvenience of having to move the cage successively in order to bring each tier in turn on a level with a single stage.

Quite recently it has been proposed to load and unload by means of hydraulic pressure : the lecturer had not seen the scheme at work, but thought that there was a great field for improvement in this matter. In collieries of moderate dimensions one pair of ropes may be raising 400 or 500 tons of coal in eight or ten hours ; in some cases 1,000 tons may be raised in that time. With the great depth comes in a difficulty, for where you have a couple of ropes passing over

one pulley, at times you will have one load near the surface while the other is near the bottom; the great inequality of the length of rope then in the two cases greatly destroys the balance; at one point in the shaft there was equilibrium, but throughout the greater part of it there has been an inequality of work on the two sides. The empty kibble, in descending with the rope attached to it, may so much outweigh the ascending full kibble that there will be a great tendency for the former to go down with great velocity, and it may be necessary to set the engine to work against it. It may be obviated to some extent (as we saw in the case of the horse power) by making the rope wrap round and round on itself, so that the full kibble acts at greater and greater leverage, while the empty kibble acts with constantly diminishing leverage, and the work may thus be more equable throughout. Hence the introduction of flat hempen ropes; but the wear and tear is so serious a source of expense that in the last few years there has been a tendency to return to another plan. This is the use of a conical drum, the first use of which the lecturer saw in Hungary, and in the mines of Berehaven, in the extreme West of Ireland. The rope commences to wind on the smaller part of the drum, and as the weight approaches the surface gets more and more on to the larger portions. Within the last eight or ten years this plan has come into large application, in conjunction with round instead of flat ropes, these being of iron or steel wire. Some of the larger drums have the slopes too great, and this gives a tendency for the rope to slip; such slip might be attended with most serious results; to prevent this, it has been suggested to place a flange at the edge. The drums are also attended with powerful brakes. Another plan is used for counterbalancing a very heavy weight. From a small drum on the same axle a strong flat chain is carried to a pulley placed a considerable height above the ground, and the chain passes down into a shallow shaft, and is there attached to a number of heavy rings of iron. This is wound in such a direction upon the drum that when the engine has its greatest task to perform—the lifting of the full weight from the bottom, with all its rope attached—the weight of the chain and iron will assist the engine; but as the engine raises the load to an easier position, this heavy chain begins to subside at the bottom of the shaft, and thus less and less of its weight acts on the drum. Similarly in the case of the descent of the empty kibble, the superabundance of power is employed in raising this chain again. This contrivance appears to answer its purpose very well, and may be found working in many of the deeper collieries of the North. In our deepest British pits may be seen some of the best arrangements known anywhere for drawing. In the Rosebridge Collieries, in Lancashire, you may step into the cage and find yourself at the bottom—800 yards below the surface—in less than a minute; and if you stand on one side of the shaft, the velocity of the cage in flying past reminds you, perhaps, of nothing else than the shot from a gun. It is argued by some that such a velocity cannot be safe, but when proper precautions are taken, we are justified in concluding, from experience, that the danger is no greater than with slow winding.

As far back as 1846 some ingenious methods began to be proposed for guarding against accidents from breaking of the rope. On a close examination you find that apparatus of this kind introduces another source of danger, and it is, of course, a very doubtful advantage to endeavor to cure one evil by another, and one should be very careful before introducing anything which would take off the responsibility from the persons concerned in the operations. These safety-cages (French, *parachutes*) have depended on one of three different plans: 1. A pair of legs with sharp teeth, which, in case of accident, shall dig into the wooden guides and support the cage, but under ordinary circumstances are kept up by the action of the rope on a pair of levers, the legs being brought into play by a spring when fracture occurs. These have been employed in many of the Belgian and French collieries with much success. 2. An eccentric is attached to the cage, with teeth in one part of it; if an accident occurs a spring is released, which has been kept in compression, and the wider toothed part of the eccentric will spring round and clutch the sides of the guides. Both these methods have been objected to, since they sometimes come into play when not required, and may give rise to accident; or again, in case of accident, if a large quantity of the rope coils on the cage it may give way; and again, that it cuts the guides to pieces. 3. Where different kinds of grips come into play by the action of a spring. Another variety of safety apparatus is for security against overwinding, a most serious cause of accidents. The safeguards, one may say, will be found to a great extent in employing good apparatus and careful men in charge of the engine, etc., but even under the most favorable circumstances such accidents will sometimes occur.

The lecturer described several varieties of apparatus by means of models, by which, in case of overwinding, the cage was detached and suspended, and referred to a paper by Mr. Wright, written for the Derbyshire Engineers' Institute, for an account of the later inventions.—*London Mining Journal.*

PETROLEUM NOTES.

FLOWING WELL OF PETROLEUM IN CALIFORNIA.

TO THE EDITOR: SIR—I am in receipt to-day of the following telegram:

"SANTA BARBARA, CAL., July 19, 1877.

"BENJAMIN SILLIMAN:—Hundred barrel well [of] forty-four [degrees] gravity green [oil]. Sulphur Mountain, Ventura.

(Signed) "CHARLES E. HUSE."

The words in brackets are not in the dispatch. Mr. Huse is a lawyer of good standing residing at Santa Barbara, and a graduate of Harvard College, whose testimony is quite unimpeachable. Sulphur Mountain divides the Ojai Rancho on the north from Cañada Laga on the south. I do not certainly know the locality indicated by Mr. Huse, but presume he refers to the south side of Sulphur Mountain. Oil of a density of 44° B. is fully as light in gravity as the present yield of Pennsylvania. But, as is now well known, the California oil has thus far developed no paraffine, and almost no naphtha in its manufacture.

Those who are interested can see a set of samples of the crude and manufactured products from the San Fernando in Los Angeles County, California (part of the property incorporated in the Philadelphia and California Petroleum Company in 1865) by calling at the office of Mr. B. Silliman, Jr., No. 20 Nassau Street, Room 70. These samples are the commercial product of the Star Oil Company of California. This industry is still in its infancy, but we are certain to see a rapid and legitimate development, now that intelligent work takes the place of speculation.

B. SILLIMAN.

NEW HAVEN, July 19, 1877.

PITTSBURG, TITUSVILLE & BUFFALO RAILROAD.—This company has sued out an injunction restraining the Pennsylvania Transportation Company from collecting, by levy and sale of the property, the judgment of $220,000, which it holds against the old Oil Creek and Allegheny River Company, to which the Pittsburg, Titusville & Buffalo is successor.

PRODUCTION, STOCKS, SHIPMENTS, ETC., OF THE PENNSYLVANIA OIL FIELDS, BY DISTRICTS, FOR JUNE, IN BBLS. OF 42 GALLONS.

Number and Name of Districts.	PRODUCTION ACCOUNT. No. bbls. of oil on hand at the wells at the close of the month.	No. of bbls. of oil produced in the month.	Average per day for the month of 31 days.	No. of bbls. of oil in iron tanks, pipe lines and refineries.	Total No. of bbls. of oil held in all the districts.	DRILLING WELL ACCOUNT. No. of wells producing.	No. of wells drilling.	No. of wells completed in May.	Aggregate daily production of new wells.	Daily average of new wells.	No. of Rigs building.	Dry holes in June.
Butler ..... } Parker ..... } Clarion .... }	80,000	711,270	23,709	2,100,320	2,180,320	3,850	220	220	2,130	9 7	125	34
Scrubgrass....	3,500	150,000	5,000	12,000	15,500	200	67	78	4,175	54¼	42	10
Franklin.....	500	12,750	425	30,000	30,500	350	7	4	30	7 5	7	2
Reno	.....	3,000	100	8,000	8,000	31	....	....	....	....	....	..
Oil City.....	600	30,000	1,000	256,464	257,064	354	7	5	40	8	7	1
Rouseville ...	400	12,000	400	8,000	8,400	195	4	2	6	3	9	1
Rynd Farm...	400	12,000	400	7,000	7,400	125	....	....	....	....	....	..
Columbia....	5,241	4,110	137	5,000	10,241	30	....	....	....	....	....	..
Petroleum Cr.	400	3,000	100	15,000	15,400	50	....	2	10	5	....	..
Shamburg	400	6,000	200	10,000	10,400	95	6	1	....	....	4	1
Titusville. ...	1,183	39,600	1,320	75,000	76,183	730	6	4	60	15	10	2
Pithole.....	400	6,000	200	15,552	15,952	78	3	2	8	4	2	1
Fagundas.....	1,700	6,000	200	35,000	36,700	150	2	....	....	....	1	..
Tidioute.....	5,000	12,900	430	90,000	95,000	238	3	2	10	....	3	1
Warren.....	1,000	14,580	486	9,139	10,139	96	6	22	220	10	4	4
Bradford.....	8,000	103,470	3,449	125,975	133,975	650	54	57	515	....	46	5
Beaver.....	500	4,110	137	1,000	1,500	130	10	4	48	12	6	2
Totals	109,224	1,130,790	37,693	2,803,450	2,912,674	7,352	395	403	7,262	18	266	64

—*Petroleum Reporter.*

THE TENNESSEE OIL REGIONS.—The Nashville *American* says that discoveries of oil are continually being made, principally in Overton County, the whole atmosphere at some points being redolent with petroleum. In many other parts of the State oil is found of a good quality and in paying quantities.

BULLION BELT RAILROAD.—A company by this name has been organized to build a road from the Allegheny Valley, near Scrubgrass, Pa., up Bullion Run to Summit and Dean City, in the new Clarion oil region. It is proposed to build a single railroad on a plan devised by Gen. Roy Stone. The stock, $70,000, has all been subscribed. The Allegheny, Kennerdell & Clintonville Railroad Company have also a force of men at work on their route. Both companies express their determination to finish their respective roads, and each is abundantly able to do so.

THE CROCUS CREEK (KENTUCKY) OIL WELLS.—The Cumberland *Courier* says: "The crude oil produced by the Crocus Creek wells yields as large a percentage of refined petroleum as any other oil of the same specific gravity found in the world, and but few American wells equal it. The Barren County oils contain far more sulphur than those of Crocus, and are in consequence more difficult to deodorize and refine. They yield 75 per cent. of white oil, while the Crocus Creek oil yields 85 to 95 per cent. of the best refined. The new Crocus well is now 360 feet deep, and is pumping 25 barrels per day of pure oil."

OIL MATTERS IN PETROLIA, ONTARIO.—There is nothing of importance to report in the developing line, and it is a fact worthy of notice and reflection by oil men, that no new well of any large production has been struck for the last nine months, although the oil territory over a considerable area has been tested. The feeling is that unless new territory is found the oil here will soon be pumped out. The shipments to the West, ending July 5, were: Crude, 4,740 barrels; distillate, 200; refined, 16. The markets all over are firmer, at a slight increase over former rates. Quotations, July 10, 1877: Crude, $1.10@1.25 per barrel; refined, 10c.@11c. per wine gallon.

PHILADELPHIA PETROLEUM EXPORTS.—Following is a statement of the exports and value of petroleum during the past fiscal year as compared with the corresponding period in 1876:

	1877		1876	
	Gallons.	*Dollars.*	*Gallons.*	*Dollars.*
Crude.....	4,262,093	558,101	8,663,564	873,592
Refined.....	50,645,921	10,763,949	60,791,242	7,963,558
Naphtha and Benzine.....	3,500,000	378,412	3,250,941	294,492
Total.....	58,408,014	11,700,462	72,705,747	9,131,642

The refining capacity of the new oil works now in course of erection at Point Breeze will be about 10,000 barrels per day.

THE CLEARFIELD (PA.) COAL REGION AS AN OIL DISTRICT.—The Osceola *Reveille* of the 14th inst. says: "Arrangements are being made to determine whether or not the Clearfield region belongs to the great oil belt of Pennsylvania. According to the theory entertained by the geologists and other scientists, the probabilities are that the chances for oil in this county are as good as in any other part of the State, without taking into account the fact of actual discoveries already made. Our faith in the existence of oil in this place is chiefly based on the fact that we have the same geologic conditions and formations here that exist in the most prolific oil districts, the only difference being that we are a little nearer the termination of the series of strata immediately over the oil-bearing sands. The distance of a few miles could scarcely make any difference in the nature and character of the strata 1,200 to 2,000 feet below the surface. The rocks in and under the coal formations are the same, and by actual tests it is evident that we have the saline rock strata that extend throughout the whole region in which the oil belts exist."

PETROLEUM CERTIFICATES.—The New York *Shipping List* of the 25th inst. says: "In this branch of the petroleum trade, business has been at a complete stand, and prices have largely declined; the sales are confined to 13,000 bbls. United yesterday at $2.01¼@2.04¾, as against $2.50 on Friday last. A Pittsburg journal gives the following history of what it calls the fight in petroleum: 'The violent fluctuations of the petroleum market for the past few days indicate warfare of no slight proportions between the great combinations that are struggling for supremacy in that trade, which resulted according to Titusville reports in cornering the Standard combination for at least a million barrels of United oil. The encounter has been one of the sharpest ever known in the history of the trade. The bull movement commenced at $1.50¾, with the intention of carrying the market up to $2.25, and then unloading. When the price struck $2, a fresh bull element took hold, and having, through the influence of a prominent Oil City banker, borrowed a million dollars from the banks in Franklin, Oil City, Parker, and Pittsburg, they gobbled up certificates until the price reached $2.26¼. At this juncture, the Empire Ring took advantage of the well-known fact that the Standard had sold Refined enormously for July at 13@13¾c., and, from the large shipments required to fill these sales, entered the market with the supposition that the Standard would be cornered. Another Franklin ring now took the field with money borrowed from New York and Philadelphia to the extent of $1,000,000, and this tripartite combination seem to have pushed the Standard

almost to the wall, and it remains to be seen upon whom they will unload. This battle of the giants has involved and financially ruined many of the brokers and dealers in the trade. The most desperate struggle has taken place within the past three days. The Titusville *Herald* says: "We have to report at least fifteen prominent brokers in Oil City, Parker and New York who have failed, together with five or six large operators. It is believed that at least a million barrels of United certificates are locked up, and a corner is thus created, but how it will terminate depends altogether upon the strength of the contestants."

THE PETROLEUM TRADE FOR THE FIRST HALF OF 1877.—The Pittsburg *Commercial* of the 7th inst. says: "The past six months has been a remarkable period in the history of the petroleum trade. The year opened with the market at the highest point that it had reached for many years past, and with the demand largely in excess of the production. The close of the period named has witnessed the development of the Bullion Run field of production, which broke prices to a point about 60 per cent. below the highest point reached during the past six months. To a large portion of the oil trade the losses were very heavy, as a prevailing opinion existed at the beginning of the year that values could not be so far depressed. Bullion Run, however, was developed and aided the bear element, which, during the first six months of the year, has been eminently successful. There has been a decline of upwards of $2 per barrel since January last, which is more than 50 per cent. of the value of the product at that time. The stocks at present are not much greater than they were in January, and yet the production has increased at least ten thousand barrels per day. According to the usual calculations for the last six months of the year, the shipments will be much heavier than during the first six, which, of course, will have its effect upon values. The movements of petroleum at this point for the first six months of the year were as follows:

	1877. 6 months.	1876. 6 months.
Crude receipts	666,523	678,219
Refined shipments	261,063	308,863

The same authority, under date of the 14th inst., observes: "Notwithstanding the rapid decline in the production of the big wells lately struck in the Bullion Oil Region, and the consequent slackening off in the excitement that prevailed, the hope was indulged to a very considerable extent that 'the belt' would yet be developed, and those who had ventured in leases be rewarded for their faith in the territory. Interest centered in the Russell well, its location being such as to render it a fair test, and for a week or more news from it has been anxiously awaited. The discouraging word came yesterday that 'the Russell well has reached the sand and is dry as powder,' and that the Preston well, but 60 rods in advance of the Big Injun, was also dry. This was supplemented by an equally unfavorable report from the Jacobs well, on the Henderson farm. The immediate effect of this information was an advance of ten cents on the price of oil."

NEW ENGLAND MINING NOTES.

TO THE EDITOR: SIR—The mining interests of New England, taken as a whole, were never on a more stable basis than at the present time, which fact partly accounts for the present comparative scarcity of sensational reports in our local papers.

Copper and silver mines appear to stand at the front just now. Gold mining, of itself, is not at present prominent, being confined to some minor operations, principally in Vermont, although good paying deposits of auriferous gravel have been found to exist in other States, notably Maine and New Hampshire. The severity of the winters in that region will always interfere somewhat with gravel mining, but gold bearing quartz, of good grade, is widely accessible in the three Northern States, and also to some extent in Massachusetts. The gold interests at Lisbon, N. H., still lay as they were thrown by the unskilled working and unprincipled speculation which ruled the district after its discovery. A rich reward awaits judicious investments there.

Silver mining is being vigorously pushed at several points, and with good average results. At Newburyport the Merrimac Mine continues to pay its dividends, and if it does not so continue for an indefinite time it will not be the fault of the *mine*.

Messrs Williams & Lowry have proved their concentration works a great success, and are about opening some of their valuable mining properties. Work on the "Ambrose" property continues, results not definitely known. Several new openings have been made in Newbury, this season, with generally good results. The greatest drawback to these mines is that they are too near Boston, and are thus to a certain extent "a prophet without honor in his own country." Work on the mine at Bristol, N. H., continues, sinking the shaft, intending to cross-cut the vein at some considerable depth. The prospects here are very good and would justify a stronger force and quicker development.

A company has been organized which is now working the silver mining property near Locke's Mills, Maine, on the Grand Trunk Railroad. The ore is of medium quality, so far as I have seen, and if present in large quantity, as is stated, ought to repay judicious working.

The Edgemoggin Mine, near Sedgwick, Maine, is being vigorously worked, and has produced a large quantity of good ore already, although little except surface work has yet been done. Arrangements are being made for the speedy erection of smelting works. Besides these more prominent interests several late discoveries in other quarters give promise of great richness and extent.

Copper mining appears to stand at the front in New England. Foremost we may mention the works at Ely, Vermont. As the next most prominent may be mentioned the mines on Gardiner's Mountain, near Lisbon, N. H., notably the Paddock mining property, which is of immense value, also the four or five other mines on the same system of veins along the mountain. I understand some work at copper mining is being done at Canaan, Vt., but have no particulars.

In Maine at Blue Hill, near Sedgwick, occurs a large deposit of copper ore, which is now being worked, and by parties who will be likely to make it a success. I am informed that it is contemplated to ship the ores to England. No copper ores in quantity have as yet been developed in Massachusetts, but in Rhode Island occurs a valuable deposit of ruby copper, which remains unworked or practically so. I am not aware of any special mining enterprises in Connecticut at present.

Work on the property of the Dracut Nickel Company, near Lowell, Mass., is being pushed with good results for the amount of development done. Other discoveries of nickel ores have been made, but I do not know of any other now being worked in this section.

I saw in the ENGINEERING AND MINING JOURNAL of the 14th inst. a short paragraph relating to the late discovery of a mine in Milan, N. H., carrying copper, gold, etc. This is really a very great discovery, as for a surface showing it has never yet been equaled in New England. The vein so far as has yet been examined is of good average thickness of fifteen feet, and in places near twenty feet, as near as can be determined from the gossan, and is a series of ore bands carrying high grade copper ores, and also galena to no small amount, and assaying from fair surface samples about $40 in gold to the ton, besides some silver.

"210."

JULY 17, 1877.

NORTH SHORE, LAKE SUPERIOR.

Our correspondent "Ernest" writes as follows from this region:

The outlook for mining in this district is at the lowest point it has reached since operations began at Silver Islet. Silver Islet is doing nothing but keeping the shaft free of water, awaiting the action of the new management now being arranged in New York.

The Duncan Mine have made a contract with M. C. Bullock, of Chicago, to explore their vein with the diamond drill. The drill is now on the ground, and a favorable result is expected, as more favorable indications of ore have lately been met with. The vugs in the cross-cut 380 feet below the surface are found filled with inflammable gas, such as was found at Silver Islet, which was not the case in the upper part of the mine.

Captain Scott with a force of twelve men is exploring the vein at White Fish Lake, from which good indications were obtained last year.

Colonel Wilson is exploring the veins on 2A location, entirely by surface cuts, and has made very promising developments of a strong vein carrying base metals, and probably rich ore will be found as explorations progress.

The adit at Cloud Bay is being driven to cut the vein in depth.

These, with the location of new claims near Pigeon River, comprise all that is being done at present.

CORRESPONDENCE.

MINERS' WAGES AT STONEBORO, MERCER COUNTY, PA.

TO THE EDITOR: SIR.—I have had my attention called to an incorrect statement of our affairs which appeared in your issue of the 19th of May last, under the head of "Labor Notes," and although it is late to make the correction, I hope you will do so as soon as possible, in justice to the miners whom it speaks of.

I will merely correct that part which says that "95 cents is paid here for mining coal." This is a grand mistake. The facts are as follows: we were paid 80 cents per ton of screened lump before the company made the change in the width of the screen. *They* claim that it only makes a reduction of 4 cents per ton. By *our* calculation we make it 15 cents of a reduction. Our figures have always been open for correction, as we want nothing but what is right, although we seldom get credit for doing so, but are put down as a lot of Molly Maguires, etc., etc. By this, if we are correct, you will see that 80 cents now is only equal to 65 cents before the change; therefore, in demanding 15 cents advance per ton we only demand our old price. Again, prior to the date of that "note," we had received another notice, on the 27th April last, telling us that a still further reduction of 10 cents per ton would "take effect May 15th, 1877." Thus, you see, a difference of 25 cents per ton stands between us.

For any person acquainted with coal mining to say that a screen can be changed ¼ inch wider, and the bars also changed from a flat to a "diamond shape," and not make a difference of more than 4 cents per ton, shows a great lack of judgment. I can prove where a change of 5 cents per ton was made by nothing more than a change in the rate of "dumping" the coal. This company makes three sizes of coal, namely, "screened lump," "nut," and "slack." The miners only get paid for screened lump; therefore, it is plain that the more of our coal they can run through the screen the less they have to pay for. Hence it is that the men at Curtis Hill can make more money at 48 cents per ton than we could at 95 cents. *They* get paid for nearly all they dig; *we* get little better than the half.

Again, to show that we wish to do what is right, we have made the following offers to the company: for screened lump, 95 cents per ton; for coal weighed before being screened, 50 cents per ton; or by the day, at $1.75. We also leave the whole question to be settled by a Board of Arbitration. But no; they thought that because there are men amongst us who have large families and have nothing but bread and water to live upon—nay, even have had to go to work with an empty dinner-bucket to hide their poverty, they can compel us to take every other insult. This is the sixth reduction now before us, and the first which we have struck against.

The men stand by the law in every point, so that none can ridicule them as a lot of rioters. Remember they have been provoked in every shape and form to do so. Thirty families have been turned out of their homes. Some are living by the roadside, in shanties, where their furniture was put. We are now in the fourteenth week of the strike, with no signs of settlement. We may as well starve at home idle as go to work and do so. The doctrine that a "half loaf is better than none" is fast playing out. We must have the whole one when it is due.

R. S.

JULY 19, 1877.

Will our correspondent please send us the "official" offer of arbitration made by the miners to the company, and the company's answer? Or, if no such proposition has been made, by all means let the men make it, and put the company in the wrong, if it will not accept so fair a solution of the difficulty. The ENGINEERING AND MINING JOURNAL has always advocated arbitration in such cases, and will use its influence to attain that end in this case if the "bottom facts" are laid before it.

ED. E. AND M. J.

MINING NEWS.

Staff Correspondence of the Engineering and Mining Journal.

ARIZONA.

It is reported on good authority that the recent strike of ore in the southern extension of the Silver King vein is of considerable importance. As is well known the Silver King Mine proper sprang into notice on the strength of a very rich ore body heavily impregnated with native silver. Extensions were taken up in both directions, and though in neither case was rich ore met with on the surface (as was the case in the central vein), yet a strong and wide crevice was shown from the start, and very few doubted the value of the properties. On both shafts were located and sinking steadily pushed. At the depth of 120 feet on the southern extension, it is now stated, very rich ore has come in, resembling in appearance and composition the best mineral taken from the central claim. As yet the miners have not penetrated far enough into the ore to speak confidently of its extent, but there is no longer any doubt that the vein contains more than one rich ore body at least.

The Silver King is at present among the finest properties in Arizona, and is a mine which, if it were located nearer to the rest of the world, would have created as much of a furor as the Raymond & Ely at Pioche or Poorman at Owyhee. Its production alone this year will probably increase the annual bullion yield of Arizona by a quarter of a million dollars.

CALIFORNIA.

The Yuba Gold Mine is situated six miles above Washington, Yuba County, California: "The country rock is a species of granitic syenite, and the vein on which the greater part of the labor has been performed is found to vary from three to five feet in thickness. Four different tunnels have followed along the lode, the lowest entering 30 feet above the river and running a southerly direction into the mountain, reaching a depth from surface of 450 feet, or a point 2,300 feet lower than the summit. A second level has been driven 200 feet above; a third, 1,000 feet higher, and a fourth, full 400 feet above the last, so that the mine is pretty thoroughly prospected and in a condition to furnish ore with dispatch and in quantity. The rock from wall to wall is represented to work from $6 to $30 per ton. The company have a 25-stamp mill, driven by an overshot wheel, 36 feet in diameter, with a 6-foot breast, and possess enviable advantages in the way of water power. They are vigorously driving every department of the business, giving employment at present to nearly 50 men. The aspect of affairs, taken all in all, presents an air of thrift and prosperity not often found in the older mining districts, and the highest hopes for its future are entertained. As the mountain here rises at an angle of 45°, the quartz glides down to the mill from the upper tunnel simply by force of its own gravity. The chute is 2,000 feet in length, made of lumber and bottom lined of iron."—*Foothill Tidings.*

NEVADA.

The Razor Blade Silver District.—The Austin *Reveille* has the following: "The working of the 26 tons of ore brought in from this district gave a yield as follows: 12 tons, $347 per ton; 8 tons, $140 per ton; 6 tons, $106 per ton. This ore was the result of nearly three months' work by four men, and the yield therefrom gave large wages to each of them for the time employed in extracting it."

The New York Gold and Silver Mining Company, Nevada—Annual Report.—This company held its annual meeting in San Francisco on the 20th ult. "According to the report of the Secretary there was $3,338.28 in the treasury at the commencement of the fiscal year. The sum of $49,875.10 has been received from assessments during the year, and the expenses have been about $50,900, leaving a balance on hand of $2,000. The indebtedness of the mine is $956; assets valued at $158,800. Superintendent Owen submitted the following report: During the year just past we have completed the third, or pump compartment of the shaft, from the 800-foot level, making a raise of 642 feet, and retimbering the other two, or hoisting compartments, whenever required, making as fine a three-compartment shaft as there is in the State. We also excavated for three pump tanks and one underground or balance pump bob. The work just completed has been very slow and tedious, owing to the hardness of the rock, it requiring the constant use of powder. This was dead work that was necessary before anything in the way of sinking or prospecting could be done. Since the completion of the shaft on the 1st of June, we have been enlarging the double station at the 800-foot level." And as our new and powerful machinery now at work at the mine is of sufficient strength to work to a depth of 2,000 to 2,500 feet, I would recommend the sinking of the shaft to the 1,000-foot level. At the same time I would suggest the propriety of cutting the ledge at the 800. Although we are not as deep as some mines in the country, we are below the level on which our neighbor, the Justice, discovered the large body of ore that they are now working upon. My reasons for making these suggestions are that there is a large body of unexplored ground between the Lady Washington on the south, and the Overman on the north."—*Gold Hill News.*

The Gold Hill *News* of the 18th July, gives the following summary of its mining news: "The Yellow Jacket election, which took place Monday, at the office of the company here in Gold Hill, resulted in the re-election of the old management. The reports of the officers are very satisfactory, and show that the financial as well as the mining management of the company have been most excellently, economically and efficiently conducted during the past year, and still continue to be so. The Savage election, which takes place to-morrow, will amicably arranged by compromise between the Keene and the Flood & O'Brien contestants, and J. G. Fair will be Superintendent. Savage will prosper better during the coming year than she has in the past year, and good ore developments will be the result before another year is to an end. More men are being put to work in the Justice, and the ore from that mine will be crushed principally by the mills in Gold Canyon, those on the Carson River being impeded, and more and more incapacitated by the failure of the water in the river. The Rhode Island mill is now actively being put in order to run on ore from the Crown Point Mine, which will be commenced in a day or two. The intense heat at the lower levels of the mines, those of the great bonanza especially, induced by the lack of cool air from the surface as well as the natural heat of the ground at those great depths, is a serious impediment at present to ore extraction, and development work is going on slower than it would otherwise. The double winze below the 1650-foot level of the big bonanza, near the line between the Consolidated Virginia and California, has cut into the porphyry horse found at the 1650, and will have to pass through it to the ore on the west. This winze is being sunk vertically, while the horse follows the dip of the ledge eastward. Not striking the horse sooner indicates the stratum to stand more vertically than it has above, or that the horse is narrower. Considerable water is encountered in this winze, which, combined with the great heat, renders the progress of sinking correspondingly slow. Plenty of water and heat interfere also with the sinking of the C. and C. shaft. The combined product of the two great bonanza mines for June aggregated $2,962,069, nearly one-half of which was gold. This amount is $153,000 in excess of the yield for May. We have no new features of interest to report this week relative to new and important mining developments, but the situation remains good, with many points of encouragement."

The Keystone Gold and Silver Mine is situated "a little north of the Utah Mine, directly on the line of the Comstock lode, as proved by the developments in the Sierra Nevada and Utah mines. The location of the mine is old; dating back to the 19th of November, 1859. The claim contains 1,800 feet of ground, commencing at the toll-house on the Geiger grade, and running northward in a direct northerly and southerly course with the Utah and Sierra Nevada locations. In 1859 and 1860 a shaft was sunk near the northern line of the claim to a depth of thirty feet.. Two hundred feet further south a tunnel was run into the hillside sixty feet, and a shaft sunk on what was supposed to be the west side of the vein to a depth of forty-six feet. Near the center of the claim a tunnel was run a distance of 170 feet, and further south, within about three hundred feet of the south line, an incline shaft was sunk to a depth of 100 feet. None of these explorations penetrated to a greater depth than 75 feet perpendicularly below the surface, and in nearly all of them quartz giving low assays in gold and silver, and other indications of the existence of a permanent and well defined vein, were found. The company which formerly owned the claim were poor men, and although unable to develop the mine themselves, were still unwilling to part with so valuable a prospect. However, a few months since, the control passed into the hands of able capitalists, who, on the 11th ult., commenced the work of sinking a first-class working shaft, and the development of the mine in good earnest. This shaft is now down 35 feet, and the sinking is being prosecuted with all possible vigor. Its location is a splendid one for working purposes, being about 350 feet north of the southern boundary, and on a steep hill-side, giving fine room for a dump, yard room, etc."—*Gold Hill News.*

UTAH.

San Pete Coal.—"A number of English gentlemen have gone to San Pete to examine the coal fields of that valley, and the practicability of a railroad from there to market. We understand that there is talk also of the Central Pacific Railroad Company purchasing some of these claims with a view to putping down a road from Ogden to San Pete valley. Such an undertaking would relieve the Central Pacific of their allegiance to Apostles Gould and Dillon, and at the same time develop one of the richest resources of the Territory. The extension of the C. P. to San Pete would create a competition in the coal and coke trade, as well as reduce the price of freight on the exports of Utah.—*S. L. Tribune, July 21.*

NOTES.

SALE OF THE BIRMINGHAM (CONN.) IRON AND STEEL WORKS.—These works were sold recently for $40,000. The works when built, about twenty-five years since, cost in the neighborhood of $200,000.

LEASE OF THE ELIZABETH COPPER MINE, PA.—Mr. Charles M. Wheatly, of Philadelphia, has leased the old Elizabeth Copper Mine, near Knauertown, Pa., and will at once open the old shafts and take out the low grade of copper ores.

ASSIGNMENT OF THE GREAT VEIN MINING COMPANY OF NEW LEXINGTON, OHIO.—This company has made an assignment for the benefit of its creditors. Its assets, principally rich mineral lands, are stated at $600,000; its liabilities are unknown.

THE NEW HAMPSHIRE GOLD DISCOVERY.—The gold excitement in the White Mountain region about Milan is at a high pitch, and so many prospectors have rushed in that the Grand Trunk Railway has established a station at the point of discovery, about a dozen miles from Gorham.

THE MACKENZIE & SAYRE MANUFACTURING COMPANY.—GAS AND SMELTING WORKS.—The attention of our readers is directed to the advertisement on the first page of *The Mackenzie & Sayre Manufacturing Company*, builders of gas works, smelting works, and machinery. The gas process and apparatus is that devised by P. W. Mackenzie, and special important advantages are claimed for them.

PHOSPHOR TIN.—The directors of the Graupenen Tin Works (Bohemia) at present furnish for the manufacture of phosphor-bronze a combination of phosphorus and tin, which is said to be very stable and does not part with its contained phosphorus even if repeatedly smelted. To alloy copper with this combination, no other precautions are necessary than those used in making the ordinary bronze. Since the quality of phosphor-bronze is dependent upon the percentage of phosphorus and tin contained, two qualities of "phosphor-tin" are supplied, No. 0 containing 5, and No. 1, 2½ per cent. of phosphorus. These two percentages suffice to prepare almost all desired qualities of phosphor-bronze. By the use of the Graupen "phosphor-tin," the cost of phosphor-bronze is lessened at least 40 per cent.; being but 8 per cent. higher than the ordinary bronze.—(*D. Ind. Ztg.*, 1877.)—*Pol. Review.*

THE CERRO DE PASCO (PERU) SILVER MINES.—Specimens of silver ore recently taken from the Cerro de Pasco silver mines in Peru show that the submerged portion of the mountain is very rich, and a rough estimate shows that a body of ore will be exposed by the new tunnel which Mr. Henry Meiggs is to build, worth from $300,000,000 to $500,000,000. These mines have lain under water for fifty years, and are scarcely known to the present generation, though they had been worked for 250 years, when the mines had to stop on account of the water. Peru has now discovered that a tunnel can be built which will drain the mountain completely, by draining off the lake from which the water in the mine comes, and she is so much in earnest about it that the first loads of the now submerged ore are expected to reach Lima in four months. It is predicted that within ten years more silver will be taken out than from the silver mines in Nevada.

GOLD MINE ON THE ROOF.—Twenty-five years ago Mr. Eckfeldt, who was then Assayer of the Philadelphia Mint, submitted the deposit or dust upon the roof of that establishment to an assay, and extracted an ounce of standard gold from 3 80-100 ounces of dust. A few weeks ago this experiment was repeated by direction of Governor Pollock, and a quantity of dust amounting to 1,732 pounds, was removed. This has just been submitted to the usual process, and has yielded 42 ounces of standard gold, and 96½ ounces of standard silver, a total of about $850. Every week the floors of the building are carefully swept and the accumulation preserved, and once a year, prior to the winding up of accounts, the woodwork of the refining-room and the gloves of the employes are burned to ashes. This, together with the accumulated sweepings, is conveyed to the sweep cellar, where it is ground in a mill and sifted and washed in a machine, the pulverized metal being caught up by mercury. The residue of the dirt is then dried, barreled and sampled, and sold to sweep smelters, who purchase it at the rate of 15 to 25 cents per pound, according to the amount of pulverized metal contained in the samples. So far this year about 260 barrels have been sold, a large proportion of which was purchased for a London firm.—*Philadelphia Evening Telegraph.*

CASTING NICKEL AND COBALT IN GERMANY AND IN BIRMINGHAM.—A scientific correspondent of a Birmingham newspaper says: "Dingler's *Polytechnic Journal* has an article on the manufacture of large castings of nickel and cobalt. The size of castings obtained is spoken of as 5 to 6 kilograms (about 10 to 12 pounds), but I much question if the Germans can produce such castings as have been obtained by Messrs. Wiggin & Co., of Birmingham. The apparatus used consisted of a round fire-proof oven, similar in construction to Deville's blast furnace. The crucible was placed on an iron plate in the middle of the furnace. A mixture of coke and charcoal was used as fuel, and air blown in at the rate of 7 to 9 cubic meters (a cubic meter is somewhat more than a cubic yard) per minute. The best graphite crucibles would not resist the action of the high temperature obtained, so a series of crucibles placed one inside the other was used. During the casting the fluid metal often began to froth up and spurt when it was brought into the molds and cooled, and the resulting casts were not solid, but blistered. To remedy this defect, the molds were surrounded by a stout cotton wick, which had been previously saturated with tar or petroleum. This was ignited as the metal approached the molds and formed a large reducing flame, through which the hot metal was passed. The castings were then allowed to cool slowly."

CHOLLAR POTOSI GOLD AND SILVER MINING COMPANY—ANNUAL REPORT.—The annual meeting of stockholders of this company was held on the 9th inst. The total receipts for the year amounted to $1,047,685.52, of which the chief items are: $710,941 from bullion, $196,202 from assessments, $100,000 borrowed from Mr. Livingstone, and $33,661 overdraft at the Bank of California. The chief disbursements were: $420,153 for the reduction of ore, $190,494.69 for mine labor, $184,469 for Chollar-Norcross-Savage shaft, $71,500 for interest and discount, and $75,881 paid overdraft from last year. The following extracts are taken from the report of Isaac Requa, the superintendent: "Ore on hand, June 1, 1876, 3,504 tons; ore extracted during the year, 39,430 tons; ore milled, 38,475 tons; ore on hand May 31, 1877, 964 tons; gross yield of bullion, $710,941.28; yield per ton from all sources, $18.69; milling and extracting per ton, $14.99; net per ton, over

cost of milling and mining, $3.70; prospecting in new and old portions of the mine, $3.16 per ton; proportion of expense, Chollar-Savage shaft, $4.72; milling and extracting, $14.99; total expenses per ton, as shown in tabulated statement, $22.87. The quantity of ore milled and bullion produced is more than double that of the previous year. The stopes are now affording 120 tons of ore per day, though the prospects at present are not as encouraging as they were at the time of making the last annual statement. The machinery connected with the hoisting and pumping department is all in good order."—*San Francisco Stock Report.*

BRASS COATING FOR IRON WARES.—The coating of iron goods with brass, according to Herr Hess, in the *Metallarbeiter*, has not attracted the attention it deserves. It is admirably adapted, according to this author, for a great variety of articles of iron, partly to preserve them from rusting, and partly to beautify them and enhance their value, and among the objects for which it will be found suitable may be enumerated: Ordinary keys, door-bells, furniture springs, cast door-plates and signs, statuettes, certain kinds of hollow-ware (if tinned inside and brassed outside they present a fine appearance), smooth turned door-knobs, nails, wire, etc., used by cabinet-makers, etc. The process is as follows: The first step is to thoroughly cleanse the articles, either by means of emery, or by laying them overnight in a weak bath of sulphuric acid. They are then to be washed off with water, a weak soda solution, and then immersed, as the cathode of a bath consisting of 2½ parts of sulphate of copper, 20 parts of sulphate of zinc, and 45 parts cyanide of potassium, in 300 parts of water. The anode should be two plates of zinc and copper of equal size. The color of the resulting brass coating may be modified by varying the depth of immersion of one or the other of the plates. The galvanic current should be a strong one, and the liberation of hydrogen bubbles on the object to be brassed should be plentiful. It is important, however, to note that the objects should be first coppered to insure a strong attachment of the brass coating.

THE PRECIOUS METALS OF THE LAND OF MIDIAN.—On the eastern coast of the Gulf of Akaba runs the ancient land of Midian, and for long years past that country has been supposed to teem with mineral wealth. The Khedive, whose viceregal rule extends to Midian, had long a desire to put rumor to the test, and asked Captain Burton to make a visit of inspection. A government frigate was placed at his disposal; a military escort was given him, as turbulent tribes make travel in Arabia no holiday task; a secretary, and, what was more important than all the rest, an able mining engineer in the service of the Khedive—M. George Marie—were attached to the Expedition. The party left Suez on the 21st of March last, and on the 2d of April they arrived at Moilah, on the east coast of the Red Sea, at the entrance of the Gulf of Akaba. It is a small port, with a tolerable anchorage and Egyptian garrison. Thence they took boat to Eynounah Bay, at the entrance of the Wady, or Valley of Eynounah, a little to the north of Moilah, on the eastern side of the Gulf. These wadies are curious. The coast is divided from the interior by a range of granite and porphyry mountains running about parallel with the sea; but water has worn its way as usual, and these gorges, each with its mountain torrent, occur at frequent intervals. They are barren, rocky places with no possibility of much culture, and yet they all bear signs of abundant population in times gone by. Large towns, built not of mud, as Arab towns so often are, but of solid masonry such as the Romans always used, roads cut in the rock, aqueducts five miles long, remains of massive fortresses, artificial lakes—all these signs of wealth and numbers are reported by Captain Burton. According to him the reason of it all is not far to seek. The rock is full of mineral wealth. Gold and silver they found, and the former seems to exist in quantity sufficient to repay the labor of acquisition. Quartz and chlorites occur with gold in them just as they are found in the gold districts of South America. The party tested both the rock by crushing and the sands of the stream by sifting, and in each case with good result. Tin and antimony they also discovered, and they had evidence of the existence of turquoise mines. Each ruined town had its mining works; dams for washing the sand and crushed rock were frequently seen; scoriæ lie about near ancient furnaces; in short, the traces are numerous of a busy mining population in a country which seems to be full of mineral wealth. From Makna (Mugna of the maps), the capital of the land of Midian, up to Akaba at the head of the Gulf, Captain Burton reports the country as auriferous, and he believes the district southwards as far as Gebel Hassani—a mountain well known to geographers—to possess the same character. He even goes so far as to say that he has brought back to life an ancient California.—*London Times.*

BEST AND BELCHER GOLD AND SILVER MINING COMPANY—ANNUAL REPORT.—The annual meeting of this company was held in San Francisco on the 9th inst. The following are extracts from the Superintendent's report: "The lateral drift 1,167-foot level, running north from the Gould and Curry shaft and connecting, with the upper stopes of the Consolidated Virginia, has been reopened and retimbered its entire length, and will in the course of a week or two be completed to the Consolidated Virginia shaft. When this is done, there will be a good circulation of air, and it will be in a condition to crosscut. Very little crosscutting has yet been done on this level, but the character of the ground passed through is favorable to the finding of ore. On the 1,500-foot level, an air course has been run from the Gould and Curry shaft to the north drift. This gave good ventilation until recently. In this drift some very nice ore was found on the south line, but the water was so strong it was impossible to continue work, which was suspended until the water was drained, which is now accomplished. The ore found upon the 1,500 is undoubtedly the same cut by the drill on the 1,700-foot level, from which so much water is now flowing. The dip of the clay on the 1,500 indicates that the ore will be struck in crosscut No. 3, 1,700 level, at the point where they cut the water. On the 1,700-foot level the following work was done: Crosscut No. 1 was run 334 feet, and from this point a drill hole ran in 407 feet. The total results were the finding of traces of mineral. In all this distance no water was cut. Crosscut No. 2 was run 246 feet. At this distance this crosscut was stopped for want of air, all that was furnished being needed for crosscuts 1 and 3. The material passed through by this drift was porphyry, clay, and gypsum. Crosscut No. 3 was run 429 feet, the ground passed through being quartz and porphyry, carrying lime and iron sulphurets. It was also moist and threw out much heat. A diamond drill was run in forty feet and then stopped on account of the force and heat of the water and the nature of the ground. It will require a week or ten days to drain this water off. The Superintendent is satisfied that the water tapped on the 1,700-foot level comes from the same vein as that tapped in the east drift, 1,500-foot level, which contained ore, and, therefore, he considers the chances of finding it on the 1,700-foot level most encouraging. As soon as the Gould and Curry 1,900-foot drift reaches the line of the Best and Belcher it will be continued by the latter company, which drift will be 200 feet deeper than their present deepest one. The mine is in fine condition to do an immense amount of prospecting cheaply. The air in the north and south drifts on each level is perfectly cool. The Superintendent recommends a thorough prospecting of the 1,200 and 1,500-foot levels. The prospects are most encouraging for making valuable developments early the coming year."

MELSENS' TREATMENT FOR LEAD POISONING.—To a Belgian professor, M. Melsens, the Paris Academy of Sciences awarded, last April, the prize of £100 founded by M. Anget de Montyon to encourage the invention of processes for diminishing the risks of unwholesome trades. This prize was decreed to M. Melsens for his method of curing and preventing lead and mercurial poisoning. The report of the committee appointed to examine into M. Melsens' process is as follows: Thirty years ago Professor Melsens pointed out iodide of potassium as a means for successfully combating the ill effects of lead or mercury on the human body. Experiments undertaken in conjunction with Professor Guillot confirmed the results first obtained by M. Melsens, who has since for a long period been pursuing his investigations and experiments. Considering saturnine or mercurial affections as being due to the presence of metal in the organs which are the seats of those affections, M. Melsens administers graduated doses of iodide of potassium. The noxious metals are, by the action of this drug, carried away in the urine in the form of double soluble iodides. M. Melsens also advises the use of the iodide of potassium as a preventive in cases where men are exposed to the effects of lead dust or mercurial emanations. Numerous experiments in the course of thirty years have proved the practical value of this system of treatment. Workmen affected with lead paralysis have been cured; others, who were unable to follow their calling from their liability to saturnine colic, have been enabled to take it up again, fortified by a regimen of which a dose of iodide of potassium formed part. The result of the observations made at Brussels and Lille, and the letters and certificates sent to the Academy, leave no doubt on the point. With regard to mercurial affections the observations made by M. Melsens in person have been confirmed by those made at the mercury mines at Idria. The workmen engaged in the manipulation of mercury and mercurial products at the Idria mines have been made the subject of various methods of treatment, curative or preventive, and the good effects of the iodide are no longer doubted of. At a special hospital in Vienna, ample occasion has been furnished to watch the action of the iodide in freeing the body from the presence of fixed mercury, and preventing its fixation. It has been found that, in presence of the drug, the symptoms characteristic of the mercury are removed, or diminished, or prevented from declaring themselves. The action of the iodide of potassium, according to M. Melsens' idea, is a purely chemical one. It consists in determining the metal, rendered insoluble by the formation of some albuminous compound, to take on a soluble form by the creation of a double iodide removable *per viam urinariam*. Whether this is the case, or whether its action consists in determining by destruction the evacuation of the morbid tissues containing the fixed metal, it is not the part of the committee to determine. It is sufficient that the author of this process has fully succeeded in diminishing the danger of certain mining and manufacturing operations. —*Iron.*

THE ARGENTIFEROUS MUD DISCOVERY IN OREGON.—In Wasco County, Oregon, there is a flat, thickly studded with springs of a peculiar character, that throw out mud, which has overflowed a considerable area. Some months ago it was reported that this mud had been discovered to be argentiferous and very rich, some specimens assaying over $2,000 to the ton. An effort was made to organize a company in this city to work the mud springs, but the enterprise collapsed in consequence of a suspicion raised that the mud had been "salted," and the memorable Arizona diamond-field swindle was too fresh in the recollection for the successful prosecution of another fraud in the same line. Prof. Thomas Price analyzed samples submitted, and reported that he had discovered unmistakable evidence of "salting," the microscope showing filings, crystals, and free gold, which he had no hesitation in declaring had been mixed in with the mud with the manifest design of instituting a great swindle. Prof. H. G. Hanks also examined specimens, but while he was inclined to suspect fraud, he was unable to determine positively whether the argentiferous mud was an artificial or natural production. Prof. Hanks now intimates that the flow of the Oregon mud springs is in reality heavily impregnated with silver, and this result he announced in a paper read before the California State Geological Society on June 5, 1877. The existence of springs yielding soft mud, charged with free silver, says Prof. Hanks, is new to science, and scientific men, both here and at the East, who examined specimens, pronounced them fictitious without hesitation. The specimens latterly examined by Prof. Hanks, he says, were very rich, and silver was discovered in a free state. By simple washing the silver could be wholly separated, and when then examined the microscope failed to reveal the source of the precious metal. Had it been filings, a single glance would have sufficed to detect the fact. Had the silver been precipitated from solution by copper it would have been crystallized. An amalgam of silver and mercury would have yielded a sublimate if strongly heated in a glass tube closed at one end. Such an amalgam introduced into the wet mud, and the whole heated sufficiently to have volatilized the mercury, would have left the substance in a hard, baked state, which could not again have been reduced to the state in which it reached this city. From these conclusions, if the silver had been introduced for fraudulent purposes, the substance was very remarkable, from the fact that some process had been employed not easily understood. Prof. Hanks finally obtained the address of a gentleman represented to him as being of unquestioned character, Richard Hurley, residing in the vicinity of the wonderful springs in Wasco County, and applied to him for information. In reply to Prof. Hanks, Mr. Hurley writes: "There is no mistake as to this mud containing silver. I have assayed over 100 samples which contained silver, some as high as $2,300 to the ton. The samples I obtained from the springs myself. I think the weather has considerable to do with the mud containing silver. I obtain the best results when the weather is warm. Sometimes in one of the larger springs, when the weather is cold, the mud will be of a yellow color, showing no silver, but when the day is warm the mud is blackish-blue, at least in places, and rich in silver. They seem to work more actively in a warm afternoon. Some of them contain a great deal of acid, the bones of animals that fall into them being dissolved in a few months. There are old wells which assay from $5 to $1,200 to the ton. One assay I made from the flat, half a mile from any spring, assayed $1,200 to the ton. There is a great deal of salt, almost pure, all over the spring flat. There are between 100 and 200 quartz leads discovered, running in two directions close to the spring. I find silver in several of them, all the way from a few dollars to $100 to the ton. Some of these leads run through the springs, at least they point in that direction. The altitude of this place is between 4,000 and 5,000 feet." Prof. Hanks also refers in his paper to the recent discovery of a peculiar silver-bearing deposit located in Southwestern Utah. It occurs in the "Maud Mine," six miles from Leeds. Some assays as high as $700 per ton have been made. Instead of being sandstone, as supposed, Prof. Hanks found the deposit to be sedimentary, but closely resembling the Oregon mud. Under the microscope it has all the appearance of that strange substance. The Oregon mud, if allowed to dry in large quantities, would soon form a similar substance to the Utah mineral, in appearance at least. The silver is in the state of chloride, and is seen under the microscope both amorphous and in crystals. An analysis of the two minerals will be interesting, and may throw some new light on the subject.—*San Francisco Examiner.*

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STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending July 21, and years from Jan 1st.

Tons of 2,240 lb.	1877. Week.	1877. Year.	1876. Week.	1876. Year.
Wyoming Region.				
D. & H. Canal Co.	49,829	1,238,106	50,815	971,072
D. L. & W. RR. Co.	63,051	1,281,494	20,164	710,877
Penn. Coal Co.	27,185	606,345	12,994	484,897
L. V. RR. Co.	24,726	565,523	12,102	475,432
P. & N. Y. RR. Co.	1,499	32,024	....	12,649
C. RR. of N. J.	29,159	831,777	10,932	599,204
Penn. Canal Co.	17,487	205,477	12,653	166,915
	212,936	4,761,346	119,720	3,421,046
Lehigh Region.				
L. V. RR. Co.	67,020	1,634,391	42,707	1,220,987
C. RR. of N. J.	39,270	842,049	12,348	585,872
D. H. & W. B. RR.	338	8,120	1,557	22,173
	106,628	1,484,560	56,612	1,829,032
Schuylkill Region.				
P. & R. R. RR. Co.	136,803	3,215,068	3,163	2,053,381
Shamokin & Lykens Val.	15,992	348,020	18,626	435,180
	152,885	3,593,087	21,789	2,488,561
Sullivan Region.				
Sul. & Erie RR. Co.	165	5,650	...	26,409
Total	472,614	10,844,644	198,121	7,765,048
Increase	274,493	3,079,596	....	....
Decrease	....	....	....	....

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent of the whole production.

Receipts and shipments of coal at Chicago, Ill., for the week ending July 21, and year from January 1:

	Week. Tons.	Year. Tons.
Receipts	51,770	811,370
Shipments	4,250	109,947

The shipments of coal at Cleveland, Ohio, for the week ending July 21 were as follows: shipped coastwise, 12,646 tons; total for year, 125,289 tons; foreign shipments, 1,447 tons; total for year, 42,829. Total of coastwise and foreign shipments for week, 14,093; for year, 168,108.

Receipts of Coal at Boston, for the week ending July 20 and years from Jan. 1.

Tons of 2,240 lb.	1877. Week.	1877. Year.	1876. Week.	1876. Year.
From				
Alexandria and Georgetown	4,769	39,628	1,962	24,479
Philadelphia	17,882	321,799	10,310	250,090
Baltimore	1,100	71,685	4,210	70,801
Other places	6,620	158,404	5,329	142 294
Great Britain	....	1,249	....	5,916
Nova Scotia	657	9,679	994	7,985
Total	31,028	602,444	22,805	499,565

The Receipts of Coal at Rondout, N. Y., by the Delaware & Hudson Canal for the week ending July 25 were 336 boats, carrying 43,250 tons.

Perth Amboy business:

	Tons.
Received for the week	26,119
Shipped for the week	30,831
On hand July 21	126,894

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Piedmont Railroads amounts to 116,737 tons, as compared with the corresponding period in 1876.

The production of Bituminous Coal for the week ending July 21, was as follows:

Tons of 2,000 lb., except where otherwise designated.

	Week, Tons.	Year, Tons.
Cumberland Region, Md.		
Tons of 2,240 lb.	10,918	735,923
Barclay Region, Pa.		
Barclay RR. tons of 2,240 lb.	5,558	175,798
Broad Top Region, Pa.		
Huntingdon and Broad Top RR.	2,131	73,279
*East Broad Top	917	26,344
Clearfield Region, Pa.		
*Snow Shoe	536	22,355
*Tyrone and Clearfield	20,114	660,648
Allegheny Region, Pa.		
*Pennsylvania RR.	2,997	103,338
Pittsburg Region, Pa.		
*West Penn. RR.	2,591	96,654
*Southwest Penn. RR.	526	21,198
*Penn & Westmoreland gas coal, Pa. RR.	9,955	380,175
*Pennsylvania RR.	5,504	190,018

*For week ending July 7.

The Production of Coke for week ending July 7.

Tons of 2,000 lb.	Week.	Year.
West Penn. RR.	884	32,741
Southwest Penn. RR.	10,378	314,919
Penn & Westmoreland Region, Penn. RR.	670	40,255
Pittsburg, Penn. RR.	690	67,209
Total	12,822	455,124

COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 27, 1877.

Anthracite.

The business in this article has been very much disturbed by the existing and anticipated strikes. The Delaware & Hudson Canal Company has advanced its prices 50c. per ton at wholesale, and the Pennsylvania Coal Company an equal amount at retail. Ordinarily, however, the market stands firm at the old list prices, with many not taking new orders, or only on conditions. Tuesday and Wednesday there was quite a demand from those who feared that they would be unable to secure supplies or would have to pay an advance. Yesterday the demand fell off again, but to-day it has been renewed with even greater force. Certain sizes of coal are not in plentiful supply, but upon the whole there is a very large supply of coal mined and ready for market, although, owing to trouble at some of the shipping wharves, all of this is not available. However, there is sufficient coal that can be put on the market to prevent either a famine or any great advance in prices, even should the strike assume greater dimensions than seems probable. The Delaware & Hudson Canal Company has several hundred thousand tons of coal on hand, and is consequently the first to make a prominent advance. Its object in doing this is not fully understood, but it is evident that if a strike occurred this company would suffer less than some of the others, and an advance in price accompanied by a refusal to advance wages would increase the probabilities of a strike. The market does not at present warrant such an advance.

Reports are to hand that the Lehigh & Wilkes-Barre Coal Company's Wilkes-Barre miners have struck for an advance of 20 per cent., and that the Delaware, Lackawanna & Western Railroad Company's miners ask an advance of 25 per cent. Some of the Northumberland County miners are reported to have struck and destroyed two breakers belonging to the Mineral Run Mining and Railroad Company. There are sundry minor disturbances, and rumors that further large strikes will be commenced. It is said that the plan of the Wyoming miners is to drive all employes from their work, not even leaving the pumpmen, and that if their demands are not acceded to, they will let the mines fill with water. The miners of anthracite coal have had considerable sad experience during the past three years, and it is to be hoped that they will not act rashly now. Let us see what their position is and consider the justice of their present demand.

Owing to limited employment the earnings of the men are so small, as in many cases barely sufficient to furnish themselves and families with the necessaries of life. Although this is a very unsatisfactory state of affairs, it is a well known fact that the mining companies, as a rule, have been doing business at a considerable loss, and there is no doubt that they would find it less disastrous to close their collieries than to grant the demands of the men. This would probably result in two or three months' idleness, which, in the present condition of the men, must bring about actual starvation. If breakers should be burned and the mines be permitted to fill with water, the position of the men would be made still worse; for then the companies would be unable to furnish employment for a long time to come, though the market price of coal might warrant an advance in wages.

Both of the auction sales advertised in our last were indefinitely postponed, owing to the unsettled state of the labor question.

Our reports of the production of anthracite coal for the week ending July 21, show an increase over the previous week and the corresponding one of last year. The total output last week was 472,614 tons; for the previous week, 456,911 tons; and for the corresponding week of 1876, 198,121 tons. The total production from January 1 was 10,844,644 tons, as against 7,765,048 tons for the corresponding period of last year, showing an increase of 3,079,596 tons this year. Owing to the large decrease in shipments, caused by the labor disturbances this week, this excess will be diminished in our next report.

Bituminous.

The important sources of supply are entirely cut off from market by the strikes on the Chesapeake and Ohio Canal, Baltimore and Ohio Railroad, and Pennsylvania Railroad. The stock of these coals at the seaboard will not more than supply the steamship wants for two weeks, while even a large portion of this coal, especially that at Greenwich, Philadelphia, is not available at present. The Pennsylvania R. R., as a matter of precaution, has confiscated all the coal in transit, thereby reducing the supply that might have been given the steamship companies. The Chesapeake and Ohio R. R. has some local disturbances at its mines, but will be able to furnish some steam coal, while considerable supplies could be brought from the provinces in ten days or two weeks. The following are the quotations of these coals delivered in New York: Pictou, $4 75; Block House, $4 50; Caledonia, $4 25; Glace Bay, $4 25; and Sydney, $4 50. If a large quantity should be suddenly required, freights would be so affected as to increase these figures, say 25c. to 50c. per ton. The gas companies are generally carrying very liberal stocks of coal, and will not suffer from delay in deliveries.

New York.

Wholesale Prices of Anthracite Coal f. o. b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
‡Lackawanna at Rondout	3 00	3 00	3 00	3 00	3 10	3 00
*Scranton at Hoboken	....	2 18	2 26	2 41	2 55	2 35
Wilkesbarre at Port Johnston	2 65	2 65	2 65	2 65	2 75	2 60
Plymouth, R. A.	...	....	2 65	2 65	2 85	2 70
Susque: Coal Co., (S. H. Brown & Co.,) At Amboy	2 50	2 50	2 60	2 65	2 75	2 60
Kingston at Hoboken	2 50	2 50	2 60	2 65	2 75	2 60
Pittston at Newburgh:						
A. S. Swords	2 50	2 50	2 50	2 50	2 60	2 50
*Penn. Coal Co.	2 51	2 47	2 50	2 48	2 51	2 45
Wyoming at Perth Amboy	....	2 65	2 65	2 65	2 75	2 75
Lehigh Coals.						
Old Company at port Johnston	3 25	....	2 85	2 85	2 75	2 60
Old Company's Room Run "	3 25	....	2 85	2 85	2 75	2 60
Sugar Loaf, Hobok. & Amb."	3 25	....	2 85	2 85	2 75	2 60
Lehigh at Perth Amboy	3 25	....	2 85	2 85	2 75	2 75
Honey Brook Lehigh	3 25	....	2 85	2 85	2 75	2 60
Mount Pleasant at Hoboken	3 25	....	2 85	2 85	2 85	2 75
Cross Creek at Port Johnston	2 65	2 65	2 75	2 75	2 75	2 60
Schuylkill Coals *at Port Richmond, Philadelphia.*						
Schuylkill white ash	....	....	....	....	....	....
Schuylkill red ash	....	....	....	....	....	....
Lorberry	....	....	....	....	....	....
Lykens Valley	....	....	....	....	....	....

‡Boats towed by the D. & H. Co. at its expense to and from New York Harbor.

* These quotations represent the average prices of the last auction sale

	Per ton.
Freight from Hoboken and Weehawken to New York	35c.
" " Elizabethport & Port Johnston to N. Y.	35c.
" " South Amboy to New York	35c.

Freight by the boats of the companies from Hoboken, Rondout, Port Johnston, Weehawken, South Amboy and Perth Amboy to New York City and vicinity 50c.

Pittston coal at New York delivered by Penn. Coal Co.'s boats 60c. per ton additional.

Lackawanna coal delivered to carts in New York or Brooklyn, 50 cents per ton additional.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$4 50	$5 50
" " at S. Amboy.	5 00	5 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
Youghiogheny, Waverly Co., at Balt.	4 50	5 65
Despard, West Va.	4 50	6 00
Murphy Run, West Va., at Baltimore	4 50	5 85
Fairmount, West Va., " "	4 40	5 70
Newburg Orrel, Md. " "	4 50	6 00
Cannelton Cannel, West Va.	....	10 00
" Splint " at Richmond.	6 00	7 00
" Gas Coal at Richmond	4 00	5 65
Peytona Cannel W. Va. at Richmond	....	10 00

Manufacturing and Steam Coals.

Cumberland at Georgetown and Alexandria, Va.	2 85@3 00
Cumberland, at Baltimore	3 15@3 25
Clearfield f. o. b. Canton, Baltimore	3 25@....
Cumberland	4 00
Cumberland, at Baltimore	4 50
Clearfield f. o. b. Canton, Baltimore	4 50

Clearfield "Eureka" at mines per ton 2,000 lb., 75c.; f.o.b. Baltimore and Philadelphia per ton of 2,240 lb., $3.25; f.o.b. South Amboy, $4.25; alongside at New York, $4.50.

Foreign Gas Coals.

	Sterling.	Am. cur'cy
Newcastle, at Newcastle-on-Tyne	8/6@10/6	5 50@ 6 00
Liverpool House Orrel, at Liverpool	25/	13 00
Ince Hall Cannel "	35/6	18 00
" Gas Cannel "	25/6	10@10 50
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S.	1 75	4 50
Caledonia, at Port Caledonia	1 50	4 25
Glace Bay, at Glace Bay	1 60	4 25
Lingan, at Lingan Bay	1 75	....
International mines at Sydney	1 75	4 50
Pictou, Vale mines, at Pictou	2 15	4 75

Retail Prices in New York.

Anthracite.

Per 2000 lbs.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$3 75	$4 00	$3 75
Lackawanna coal, delivered	3 75	3 75	3 75
Wilkes-Barre, delivered	4 30	4 60	4 30
Lehigh and Locust Mountain, del'd	4 55	4 85	4 55
Schuylkill Red Ash, del'd	5 25	5 50	4 75

The Cost of delivery for Pittston coal ranges from 40cts. to $1 10 per ton, according to distance from the yard.

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$18 00
Liverpool House Cannel " " "	18 00
American " " " "	11 00
Cannelton Block, or splint, " " "	10 00
American Orrel " " "	11 00
Red Bank Cannel " " "	9 00
Cumberland " " "	7 00

Baltimore. July 26, 1877.

Specially reported by Messrs. E. STABLER Jr., & Co.
Wholesale Prices.

AFLOAT BY CARGO PER TON OF 2,240 LB.

Lump and Steamboat	$3 40	Stove	$3 65
Broken	3 25	Chestnut	3 40
Egg	3 30		

In cars in dealers' yards or on switch, 15c. per ton additional.

Lykens Valley Red Ash.

AFLOAT BY CARGO.		BY RAIL IN CARS.	
Broken	$3 98	Broken	$4 15
Egg	4 13	Egg	4 30
Stove	4 13	Stove	4 30
Chestnut	3 36	Chestnut	3 80

From wharf or yard to the trade, 50c. per ton additional.

Bituminous.

George's Creek, f. o. b. at Locust Point	$3 50 to $3 60		
Clearfield, " Canton	3 30 to 3 40		

Boston. July 21, 1877

COAL.—The belief is gaining ground among retail dealers that there will be no combination this year at least, and very likely no diminution of production. Such being the case prices will very likely rule even lower before winter than at present; for, since dealers, wholesale and retail, are not particularly heavily stocked, and since the actual consumption cannot have increased 28 per cent. which is the increase of production since the 1st of January, it is clear that consumers, both of stove and of manufacturing sizes, must have been purchasing of late materially in excess of their immediate requirements, believing that the present very low range of prices is abnormal. This is decidedly the fact so far as our own experience goes. Hence production must be diminished or an export outlet found at a lower range than at present.

On Wednesday next the Delaware, Lackawanna, and Western Railroad Company will sell 110,000 tons, and the Pennsylvania Company will sell 100,000 tons the following day. These auction sales, it is now beginning to be known, are not always genuine affairs, and confidence is thereby shaken. It is said that of the entire amount bid for at times only half the quantity will be taken away. It is stated also that parties from the country have paid more, in cash, at the auction sales than they could obtain the same article for on time privately.

Freights continue dull. From New York we quote $1@10; Philadelphia, $1.10@1.20; Baltimore, $1.25@1.35; Alexandria and Georgetown, $1.40@1.50.

We quote Boston wholesale prices as follows:

Anthracite, broken	$3 75@3 90	Cannel, English	$16 00
do. egg	3 75@3 90	do. Buckeye	10 00
do. stove	4 00	Lingan	4 00
Cumberland	4 25	Pictou	5 00
Clearfield	4 00	Penn	5 50
Westmoreland	5 50	Youghiogheny	4 50@5 50
Caledonia	4 00		

—*Commercial Bulletin.*

Buffalo. July 26, 1877.

Specially reported by LEE & LOOMIS.

	Lump.	Run of Mine.	Nut.	Slack.
Connellsville Coke	$5 10	....	.....	....
Brookfield Coal	4 00	....	.....	....
Brier Hill	3 85	....	2 85	....
Youghiogheny	4 00	....	.....	....
Monterey, Catfish	3 25	3 00	.....	2 25
Stoneboro'	....	.... broken	2 75	2 25
Sterling Cannel	5 00	4 75	4 50 nut & slack	....
Reynoldsville	3 25	3 00	1 90	2 25
Buffalo Coal Company	....	3 00	.....	2 25

The Scranton, Wilkes-Barre, Plymouth, Shamokin, and Delaware and Hudson (Lackawanna) are offered for the present at the following prices per ton of 2,000 lb.:

Delivered at	Elmira.	Ithaca.	Syracuse.	Rochester	
	Afloat.	Afloat.	Afloat.	Afloat.	Ret. Del.
Lump	....	....	....	....	....
Grate	$3 50	$2 85	$2 85	$3 10	$4 35
Egg	3 50	2 95	2 95	3 20	4 45
Stove	3 75	3 20	3 20	3 45	4 70
Nut	3 75	3 10	3 00	3 25	4 50

Delivered at	Oswego	Erie.	Buffalo.		
	F. O. B.	F. O. B.	Afloat.	F. O. B.	Ret. Del.
Lump	....	....	....	....	....
Grate	$3 25	$3 75	$3 35	$3 75	$4 60
Egg	3 35	3 85	3 45	3 85	4 70
Stove	3 60	4 10	3 70	4 10	4 95
Nut	3 40	3 90	3 50	3 90	4 75

Cost of coal from Erie, Oswego, Sodus Point, or Charlotte for Western market, same as if shipped from Buffalo. Terms cash. All payments to be made in New York city funds:

Chicago, Ill. July 24, 1877.

Specially reported by Messrs. RENO & LITTLE.

The following are the prices to-day for coal:

Lackawanna Stove	$6 00	Erie and Brier Hill	$5 50
" Chestnut	6 00	Wilmington and Ill.	3 50@4 00
" Grate and Egg	5 75	Blossburgh	6 50

Indianapolis, Ind. July 24, 1877.

Specially reported by Messrs. COBB & BRANHAM.

Wholesale on board cars, and retail delivered to consumers

BITUMINOUS.

White River, per ton	$ 2 50	Peytona Cannel, per ton.	$ 5 75
Brazil Block, "	2 25	Indiana Cannel	4 50
Highland, grate, "	2 00	Hocking Valley	4 25
Block coal, nut, per car.	18 00	Youghiogheny	4 50
Highland " "	18 00	Blossburg (smithing)	6 50
Block Slack "	17 00	Piedmont "	6 50
		Gas Cake, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre).

Broken	$7 60	Nut	$6 70
Egg	7 60	Stove	6 70

Lehigh Anthracite.

Broken	$7 60	Nut	$7 30
Egg	7 60	Stove	7 70

Retail, per bushel, delivered.

Sand Creek	13c.	Block Nut, steam	8c.
White River	13	" Slack, "	0
Brazil Block	13	Virginia Cannel	27
Highland Grate	11	Youghiogheny	16
Block Nut, domestic use.	11	Blossburg	26
Highland Nut, " "	11	Piedmont	26
" " steam	8		

GAS COKE (measured.)

Crushed	14c.	Lump	12c

ANTHRACITE.

Wilkes-Barre and Lackawanna (all sizes)	$7 50 per ton.
Lehigh, retail	8 50 per ton.

Louisville, Ky. July 24, 1877.

Specially reported by Messrs. BYRNES & SPEED.

Below find latest quotations:

WHOLESALE.

Pittsburg	7c. per bush.	Pine Hill	8½c. per bush.
Raymond City	7c. "	Kentucky	7½c. "

RETAIL.

Pittsburg	11c. per bush.	Pine Hill	11c. per bush.
Raymond City	10c. "	Kentucky	10c. "
Indiana Cannel	17c. "	Honeywell Can'l	19c. "
City Make Coke	8c. "	Anthracite $8 50 to $9 per ton.	

Montreal. July 23, 1877.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Scotch Steam	$4 25	Cape Breton Steam	$3 75
Pictou	4 00	Newcastle Smiths	5 00

Anthracite at retail, per 2,000 lb. delivered.

Egg	$4 60	Chestnut	$4 70
Stove	4 80		

Milwaukee, Wis. July 23, 1877.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2,000 lb.

Anthracite, egg, chestnut, and stove	$5 50		

Wholesale price per ton of 2,000 lb.

Lehigh lump	$6 50	Connellsville coke on RR. track	$7 25

New Orleans, La. July 23, 1877.

Specially reported by Messrs. C. A. MILTENBERGER & Co.

PITTSBURG COAL.

At wholesale (by boat load)	35c. per bbl.
To steamboats	40c. "
" manufactories	50c. "
" families	65c. "
In hhds. (for shipment)	$6 00 per hhd.

ANTHRACITE COAL.

At wholesale	$7 00 to 8 00 per ton.
" retail	11 00 "

VIRGINIA CANNEL COAL.

At retail	$1 00 per bbl.

ST. BERNARD (KY.) COAL.

To steamboats	40c. "
" families	55c. "

Philadelphia, Pa. July 26, 1877.

Specially reported.

There has been so far no interruption in the Schuylkill region, except the passage of trains for one day, owing to a mob not connected in any way with the road, having attempted to inaugurate at Reading the embargo existing on some other roads. There is no question in dispute between the Reading Railroad and their employes at preseat. Coal is now coming through regularly. Prices remain low, too low for many of the individuals, and the tonnage of the road is thereby decreased. Freights are also low, as low as $1 to $1.05 for large vessels to Boston, and 50c. to several of the Southern ports. There is a better feeling in stove coal, which has been the dull size so far this season, and which is always the best size in the fall. Bituminous coal is very scarce amongst consumers, and not to be had. Consumers of that kind of coal may have to fall back on anthracite.

Richmond, Va. July 26, 1877.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2,240 lb., f. o. b.

Kanawha Cannel	$9 00	New River Bituminous	$3 60
Coalburg Splint	5 70	Clover Hill Coal	3 00
Lewiston "	5 70	James River Bitum	3 50
Kanawha Gas Coal	4 90	" " Carbonite	5 25

Sandusky, O. July 24, 1877.

Specially reported by C. E. BLACK, Agt. Con. Coal & Mg. Co.

We quote coal on cars at Sandusky, as follows:

Per ton of 2,000 lbs.

Anthracite.

	Grate.	Egg.	Stove.	Chestnut
Wilkes-Barre	$4 80	$4 80	$4 80	$4 80
Lackawanna	4 80	4 80	4 80	4 80
Lehigh	5 82	5 80	5 80	5 80

Bituminous.

Massillon	$2 90	Straitsville	$2 65
Del Carbo	2 65	Shawnee	2 65
Hocking Valley	2 65	Blossburg	4 75

Prices f. o. b. vessel for soft coal, 15c. advance on car prices. Prices retailed delivered 50c. above car prices.

San Francisco, Cal.

From the *Commercial Herald* of July 19, 1877.

COAL—Imports from January 1 to June 16:

	Tons.		Tons.
Anthracite	9,602	Vancouver Island	43,705
Australian	28,390	Rocky Mountain	113
Coos Bay	17,079	Saghalien	40
Cumberland	7,845	Seattle	55,951
English	40,734	Bellingham Bay	6,200
Chili	3,951	Ione, Cal.	764
Mt. Diablo	39,995		

Our tables are so full and complete as to preclude the necessity of any special comments at this time, as it would be a repetition of the "old, old story" of large imports and an over-stocked market. Prices are lower here than ever before. We are simply following in the wake of New York where supplies are immense and prices far below the cost of production. In the absence of any special sales or movement we simply state that the general market is sluggish. Egg size Pacific Coast bituminous is selling by the cargo at $5@5.50 per ton, while coarse kinds of Seattle, Nanaimo, Wellington, Coos Bay and Bellingham Bay screened may be quoted at $7.50@8 per ton, according to quantity. Black Diamond and other California Mt. Diablo coals $5.75@7.75 for fine and coarse respectively. Prices of Scotch and English steam to arrive may be quoted at $8.50@9; West Hartley. $9@9.50.

St. Louis, Mo. July 24, 1877.

Reported by JAS. J. SYLVESTER, Secretary of the Anthracite Coal Association.

Retail prices, delivered. Ton of 2,000 lb.

ANTHRACITE.	per ton.		
Lackawanna	$8 00@8 50	Schuylkill	8 00@ 8 50
Wilkes-Barre	8 00@8 50	Lehigh	9 00@ 9 50

BITUMINOUS.

Blossburg	9 00	Big Muddy	3 00
Pittsburg	4 50	Illinois Coals	2 50@3 00
Indiana Block	4 00	Connellsville Coke	6 50

Toledo, Ohio. July 24, 1877.

Specially reported by Messrs. GOSLINE & BARBOUR.

We report prices of coal on cars at Toledo as follows:

Ton of 2,000 lb.

Straitsville lump	$2 70	Hocking Valley nut	2 30
" nut	2 30	Massillon lump	3 00
Shawnee lump	2 70	Cumberland	5 40
" nut	2 30	Blossburg	5 40
Hocking Valley lump	2 70		

	Grate.	Egg.	Stove.	Chestnu
Pittston	$4 95	$4 95	$5 20	$5 10
Wilkes-Barre	4 95	4 95	5 20	5 10
Lackawanna	4 95	4 95	5 20	5 10

For retail delivery in city the prices are as follows: Stove and chestnut $5.75; grate and egg, $5.50 per ton.

Prices soft coal f. o. b. vessel for Lake shipments will be from 15 to 20c. per ton more than prices on cars.

Freights on Bituminous Coals from the Mines to Tide Water Shipping Ports.

For the above rates we refer to our issue of July 21.

Freights

Representing the latest actual charters up to July 26.
Per ton of 2240 lb.

PORTS.	From Philadelphia.	From Baltimore	From Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me.	1 75	....	....	1 50
Albany	...	....	....	....
Alexandria, Va	....	....	....	....
Annapolis, Md	....	....	....	...
Bangor, Me	1 25	....	....	90
Bath, Me	....	1 25	....	1 00
Baltimore	50@60	....	....	....
Boston, Mass.	115@130	1 30	....	90
Bridgeport, Ct.	...	1 25	....	80
Bristol, R. I.	....	..	....	80
Beverly, Mass	....	..	....	1 00
Cambridgeport, Mass.	1 00	....	....	90
Charleston, S. C.	95@100	....	....	....
Danversport, Mass	1 20†	....	....	....
East Greenwich, R. I.	....	....	....	....
Fredericksburg, Va.	....	....	....	....
Fall River	1 10	1 13	....	80
Gloucester	100@120	..	....	....
Hingham, Mass	1 25	..	....	....
Hartford, Conn.	....	....	....	....
Hoboken	....	....	....	35
Hudson	....	....	....	....
Jersey City	....	....	....	35
Lynn, Mass.	1 12½	..	....	....
Medford, Mass.	....	....	....	....
Middletown	....	....	....	....
Marblehead, Mass	....	....	....	....
Nantucket, Mass.	1 30	....	....	80
New Bedford	1 10	1 25	....	80
Newburyport	...	1 40	....	1 00
New Haven	....	1 13	....	50
New London	....	1 13	....	....
Newport	..	....	....	80
New York	90	1 00	....	35
Norfolk	50	50	....	75
Norwalk	....	....	....	50
Norwich	1 10	....	....	....
Pawtucket	115@120	....	....	90
Philadelphia	....	....	....	....
Portland	1 00	1 25	....	90
Portsmouth, N. H.	1 25	1 40	....	....
Providence	100@110	1 13	....	....
Poughkeepsie, N. Y.	...	....	...	...
Quincy Point, Mass.	1 20	....	....	....
Richmond, Va	50@60	....	....	....
Salem, Mass.	1 25	1 30	....	90
Saugus, Mass	....	....	....	....
St. John, N.B.	1 15	....	....	....
Somerset, Mass	1 05	....	....	....
Thomastown, Me.	....	....	....	....
Troy	....	....	....	....
Trenton, N.J.	....	....	....	....
Washington	55@60	....	....	....
Wilmington, N.C.	1 00	..	....	....
Wareham	....	1 35	....	....

* And discharging and towing. † And discharging. ‡ And towing. § 8c. per bridge extra.

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals.

per ton of 2240 lb.

	From Penn Haven.	From Mauch Chunk.	From Hazleton.	From Upper Lehigh.	From Ashley and Sugar Notch.
To † Newark, N. J. (117 miles) via Central Railroad of New Jersey	1 36	1 22	1 80	1 10	1 92
† Mauch Chunk, Pa., via Central Railroad of N. J.	14	...	58	49	....
† Phillipsburg, N. J., 46 miles	0	56	1 14	1 05	1 26
Elizabethp't, 114 miles Pt., Johns., Hoboken & South Amboy, N. J., shipping and wharfage 15c. and.	1 00	86	1 44	1 35	1 56
High Bridge, N. J.	1 80	1 60	2 58	2 19	7 30
Elizabeth, Cranford, Westfield & Elizabethport, for consumption.	1 80	60	2 18	2 19	2 30
Jersey City, N. J., (121 miles) and New York, via L. V. RR.	1 59	1 22	2 01	1 92	2 15

From *Mauch Chunk* to *New York* (121 miles), (towing‡ limits) and Jersey City‡ via Lehigh Valley RR. 1 25

From *Mauch Chunk* to *Philadelphia* (93 m) via L. V. and L. and S. RR. and North Penn. RR. 1 25

From *Mauch Chunk* to *Philadelphia* (92 m) via L. V. and Perkiomen RR. 1 40

For way points between *Mauch Chunk* and *Phillipsburg* on the New Jersey Railroads 1 00

From *Phillipsburg, N. J.*, to *Hoboken* (84 m) for shipment via Delaware, Lackawanna & Western RR., Morris and Essex Division 65

From *Phillipsburg, N. J.*, to *Newark* (75 m) via Delaware, Lackawanna & Western RR. 66

* Rates on line coal from Hazleton are 10c. per ton above these figures.

† The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 00 per ton.

‡ On coal received by canal at Jersey City, a charge additional to the freight, of twenty cents per ton, will be made for transferring it from boat to boat, and thirty cents per ton for placing the same on the wharves and reshipping.

The distances in the above table are computed from *Mauch Chunk*. From *Ashley* to *Mauch Chunk* the distance is 51 miles, and from *Upper Lehigh*, 33 miles. From *Hazleton* 24 miles, and from *Penn Haven* 8 miles.

From *Wilkes-Barre* to *Perth Amboy* via the Lehigh Valley Railroad Company, the distance is 161 miles, and from *Mauch Chunk* it amounts to 106 miles.

Schuylkill Coals.

per ton of 2240 lb.

	From Pine Grove.	From Tamaqua.	From Schuylkill Haven.
To *Port Richmond*, via P. & R. R. R., Main Line, for shipment	1 45	1 40	1 25
Harrisburg, via Lebanon Valley Branch	98	1 37	1 22
Allentown, via East Pennsylvania Branch	1 22	1 17	1 02
Lancaster, and Points on Lancaster Branch, via R. & C. R.R.	1 30	70	1 25	1 10
Dauphin, via Schuylkill and Susquehanna ranch	70	1 18	1 03
Statedale Junction, via Berks and Lehigh ranch	1 34	1 29	1 14
Lebanon, via Lebanon and Tremont ranch	82	....	....

From *Tamanend*, to *Catawissa*, *McAuley*, *Mainville*, *Rupert*, and *Danville*, via Catawissa and Williamsport Branch Railroad 90

From *Tamanend* to *Williamsport*, *Hall's*, and *Montoursville*, via Catawissa and Williamsport Branch Railroad 1 25

Coal sent to points on the Catawissa and Williamsport branch will be charged one and one-half cent per ton per mile, and two cents per ton additional to Tamanend.

From *Port Clinton* to *Philadelphia* via Schuylkill Canal, including freight and charges for the use of cars and barges, and for tolls (exclusive of cost of unloading) 1 04

An additional charge of 25 cents per ton will be made on Chestnut and Pea Coal to whatever point consigned. If the shipper signs a release of all demands arising from a deficiency of weight at the place of destination, and agrees to indemnify the company from all claims by reason thereof, such additional charge will not be made. Releases, properly prepared, will be furnished, and can be signed at the coal offices of the company, at St. Clair, Palo Alto, Schuylkill Haven, Mount Carbon, Pine Grove, and Tamaqua.

For shipment via Main Road or Schuylkill Canal, one and one-half cent per ton per mile, and two cents per ton additional to Schuylkill Haven, Pine Grove, Tamaqua, or Port Clinton, for Canal, as the case may be.

For consumption at local points in coal region, including Shamokin, Herndon, Schuylkill Haven, Pine Grove, and Tamaqua, three cents per ton per mile, and two cents per ton additional; and a charge for *car service*, of fifteen cents per ton to individuals, and five cents per ton to manufacturers, when in Philadelphia and Reading Railroad cars, provided no charge, including freights, tolls, and car service, shall be ess than twenty-five cents per ton.

Sent westward via Northern Central Railway (in N. C. R W. Co.'s cars), four and two-tenths cents per ton per mile, to Locust Gap, Shamokin, or Herndon, provided no charge will be made less than fifteen cents per ton.

One mile extra will be added for coal passing through the East Mahanoy Tunnel.

Fractions of distances and rates will always be stated in *tenths*.

No charge will be made for weighing or making returns of coal shipped, and the latter will be furnished free of charge, upon application to the Weighmaster; if these returns are to be sent by mail, envelopes, properly stamped and addressed, must be furnished to the Weighmasters.

All coal will be charged the rates (both lateral and Main Line) current on the day it is weighed; it will also be way billed on the same day.

Circulars relating to freights on Schuylkill coals will be found in the issue of this Journal of March 24 and March 31 in the "Coal Trade Review."

For freights on *Pennsylvania & New York Railroad* we refer to our issue of July 14.

For freights on coal *via Geneva, Ithaca and Sayre Railroad* we refer to our issue of July 14.

For freights on anthracite coal from *Newburg and Rondout* we refer to our issue of July 21.

For rates of transportation on coal via the *Erie Canal* we refer to our issue of July 21.

Towing.

For rates of towing we refer to our issue of July 21.

Rates of Toll

For the above we refer to our issue of July 21.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, July 27, 1877.

American Pig.—The whole iron market is quite demoralized by the labor troubles. Buyers do not feel justified in laying in supplies, while makers are uncertain as to how long their employes will keep out of the movement, or that they will be able to secure fuel, ores, etc., to run their furnaces, so are disinclined to sell. We quote, nominally, as follows: No. 1 foundry, $18@19; No. 2 foundry, $17@18; and forge, $16@17.

Scotch Pig.—The business doing in this article is only in a very small way, at the following prices: Eglinton, $24; Coltness, $26@26.50; and Glengarnock, $25.

Rails.—No business is reported in these, although there is more or less negotiation going on. We continue to quote iron rails at mills at $33@36; and steel at $44@46.

Old Rails.—Without business, we quote these nominally, at $19.

Scrap.—This article is very quiet. We quote, nominally at $23@24.

Baltimore, Md. July 23, 1877.

Specially reported by Messrs. R. C. HOFFMAN & Co.

Baltimore Charcoal	$20@31	Mottled and White	$15@16 00
Virginia Charcoal	28@31	Charcoal C. B. Blooms	45@50 00
Anthracite No. 1	10@20	" " Billetts	55@60 00
" 2	18@19	Refined Blooms	45@50 00
Anthracite No. 3	17@19	Scrap Blooms	43@45 00

Boston. July 21, 1877.

Pig is fully as dull as ever, and concessions have to be made to establish sales. We quote $22@$23 for No. 1, $21@$21.50 for No. 2, and $20.50@$21.50 for gray forge. Scotch pig is dull at $24@$30 for store lots.

Bar is dull, quoting $46@$47 for refined, and $37@$38 for common. Nails are in light demand at unchanged prices. Sheet is selling at 3c.@3¾c. per pound. Russia is quiet at 12c. currency. We quote English spring steel 7@8c. gold; 9@11c. for German; 9@11c. for machinery; 14@15c. for cast; 10@12c. for blister; 8c. for American spring; 13½@14c. for cast; 9c. for blister; and 8c. for machinery.—*Commercial Bulletin.*

Chattanooga, Tenn., July 24, 1877.

Specially reported by J. F. JAMES, dealer in pig iron, ores, etc.

The market here remains unchanged. Demand for well known and reliable brands of pig metal equal to the supply. Sales during last week aggregate 850 tons including 500 tons for one of the Western mills. Prices unchanged.

Tenn., Ala. and Ga. Charcoal, No. 1 Foundry	$18 00@19 00		
Tenn., Ala. and Ga. Charcoal, No. 2 Foundry	17 00@18 00		
Tenn , Ala. and Ga. Charcoal, Gray Forge	15 00@16 00		
Tenn., Ala. and Ga. Coke, No. 1 Foundry	19 00@20 00		
Tenn., Ala. and Ga. Coke, No. 2 Foundry	17 00@18 00		
Tenn., Ala. and Ga. Coke, Gray Forge	16 00		
Charcoal or Coke, white and mottled	14 00@15 00		
Tenn., Ala. and Ga. Cold Blast (car wheel)	22 00@28 00		
Old rails	18 00@19 00	Wrought scrap,	
Old car wheels	16 00@17 00	No. 2	12 00
Wrought scrap,		Cast scrap	10 00
No. 1	17 00	Muck bar	32 00@33 00

Iron Ores.

Red Hematite (about 55 per cent. metallic iron) f. o. c. at mines	1 25
Brown Hematite (about 55 per cent. metallic iron)	1 75

Cincinnati, O. July 24. 1877.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

Below we hand the closing quotations of our pig iron market.

CHARCOAL.

Hanging Rock A1 Extra	$25 00@25 50	—4 mos
" No. 1 Foundry	$24 00@	—4 mos
" No. 2 "	22 00@22 50	—4 mos
" Soft Silver Gray	22 00@22 50	—4 mos
" Mill	20 00@21 00	—4 mos
Tennessee, No. 1 Foundry	23 00@23 50	—4 mos
" " 2 "	22 00@22 50	—4 mos
" Mill,	20 00@21 00	—4 mos

STONE COAL.

Ohio, No. 1 Foundry	21 50@	—4 mos
" " 2 "	20 50@	—4 mos
" Silvery	19 50@	—4 mos
" Mill	.... @	—4 mos

COKE.

Ohio & W. Va. No. 1 Foundry	23 00@25 00	—4 mos
" " " 2 "	22 00@23 00	—4 mos
" " Mill	.... @	—4 mos

CAR-WHEEL.

Hanging Rock, C. B. Car Wheel	38 00@40 00	—4 mos
Tennessee, "	30 00@	—4 mos
Missouri, "	30 00@33 00	—4 mos
Alabama, "	30 00@35 00	—4 mos

BLOOMS.

Charcoal	50 00@ ....—cash.

SCRAP IRON.

Cast	50c.@ 65c.— "
Wrought	75c.@ 90c.— "

Cleveland, O. July 21, 1877.

Specially reported by Messrs. C. E. BINGHAM & Co.

Per gross ton, on four months' time. Subject to change in market. Discount for cash 4 per cent.

FOUNDRY IRON.

No. 1, L. S. Charcoal	$26 00	Am. S., No. 1, Ch Val.	$24 00
No. 2, " " "	25 00	" " " B. 1,	22 00
No. 1, Anthracite	24 00	" " " No. 2,	21 00
No. 2, "	22 00	No. 1, Massillon	24 00
No. 1, Bituminous	24 00	B—1,	22 00
No. 2, "	22 00	No. 2,	20 00

CAR WHEEL AND MALLEABLE IRON.

No. 3 L. S. Charcoal	27 00	No. 5 & 6, L. S. Charcoal	$27 00
No. 4, " " "	27 00		

BESSEMER IRON.

Nos. 1 & 2, L. S. Char.	$26 00		

FORGE IRON.

No. 1, Gray	$19 00	White and Mottled	$18 00

Louisville, Ky. July 24, 1877.

Specially reported by Messrs. GEORGE H. HULL & Co.

No improvement in the market. Buyers inclined to purchase for present wants only. The usual time, four months, allowed on quotations below.

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$23 00@24 00
No. 2 " " "	20 00@21 00
No. 1 Southern Charcoal	20 00@21 00
No. 2 " "	19 00@20 00
No. 1 Hanging Rock, Stonecoal and Coke	20 00@22 00
No. 2 " " " " "	19 00@20 00
No. 1 Southern Stonecoal and Coke	19 00@20 00
No. 2 " " " "	18 00@19 00
"American Scotch"	20 00@22 00
Silver Gray	18 00@19 00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neutral	18 50@19 50
No. 1 Stonecoal and Coke, Cold-short and Neutral	18 00@18 50
No. 2 " " " " "	17 50@18 00
No. 1 Missouri and Indiana Red-short	21 00@22 00
White and Mottled, Cold-short and Neutral	15 00@16 00

CAR-WHEEL AND MALLEABLE IRON.

Hanging Rock, and Cold Blast	34 00@38 00
Alabama and Georgia "	28 00@33 00
Kentucky Cold-blast	25 00@33 00

Milwaukee, Wis. July 24, 1877.

Specially reported by Messrs. R. P. ELMORE & Co.

Wholesale Price.

Charcoal Iron.

No. 1 Lake Superior per gross ton	$25 00—4 mos.
No. 2 " " "	24 00—4 mos.

Anthracite Iron.

No. 1 anthracite per gross ton	$25 00—4 mos.
No. 2 " " "	24 00—4 mos.

Stone Coal & Coke.

Wholesale Price.

Warner's Am. Sc'th (Bk. Bend) per ton	$25 00@ ....—4 mos.
Soft Silvery per ton	22 00@23 00—4 mos.
Lake Superior and Lake Champlain ores	24 00@25 00—4 mos.
Sharpsville (Penn.) native ores	24 00@25 00—4 mos

Car Wheel.

Lake Superior ores per ton	$25 00@27 00—4 mos.

Montreal. July 17, 1877.

The business done this week has been of small account, trade has ruled quiet, and prices are nominally unchanged since the date of our last report. We continue to report. Pig iron—Gartsherrie, $20.50 to $21.50; Summerlee, $19.50 to $20.50; Eglinton and Clyde, $18 to $19; Langloan $19.25 to $19.75; Coltness, $20.25 to $21; Hematite, $23 to $24; American, $20 to $22. Bars—Scotch and Staffordshire, $1.90 to $1.95; best do., $2.15 to $2.25; Swedes and Norway, $4.75 to $5; Lowmoor and Bowling, $6 to $6.50.—*Monetary Times.*

Philadelphia, Pa.

[Weekly Report of the Philadelphia Iron Market, furnished for THE ENGINEERING AND MINING JOURNAL, by JUSTICE COX, Jr., & Co., Iron Merchants, 333 Walnut Street, Philadelphia, Week ending July 26, 1877.]

PIG IRON.—The uncertainty in heavy iron the past week has stopped what little business would otherwise have transpired at this always dull season. If the strike should continue, the furnaces must run short of coal, and necessitate their blowing out, and, of course, make an advance in the price of iron. At this writing, most of the companies are refusing orders, or only accepting them to deliver if they can. It is reported that one company has recalled all offers, and will not consider any further orders until this question of strike is settled. We continue to quote No. 1, $18.50@19.50; No. 2, $17.50@18.50; gray forge, $16@18.

MANUFACTURED IRON.—As with pig, there is little doing. Most of the mills using soft coal can not tell when they can get a supply, so are only running on orders. In fact, if this state of things continues, the iron business of this neighborhood will be at a standstill in a week. No large orders are being offered, or would they be accepted only at sales, and with the understanding to be delivered if they can. We quote bars, 2@2 1-10c. per lb.; plate and tank, 2½c.@6½c. per lb.; skelp, 2 12-100c.@2½c. per lb.

RAILS.—No change in prices and no sales reported. We quote steel, $45@50; iron, $33@36; all at mill.

OLD RAILS.—We have nothing to report as to sales, and quote $19@20.

SCRAP.—Nothing doing. We quote wrought, $20@26; cast, $12@18.

OLD WHEELS are quoted at $18@20.

MUCK BARS are quoted at $34@36.

Pittsburgh, Pa. July 17, 1877.

Specially reported by A. H. CHILDS.

Pig iron continues extremely dull, and while quotations remain nominally unchanged the market is weaker and the tendency towards lower prices.

	4 mos.		4 mos.
No. 1 F'dry	$22 00@24 00	Mottled&White	$18 00@19 00
" 2 "	20 00@22 00	Hot blast C'coal.	22 00@28 00
Gray Forge	19 00@21 50	Cold " Western	40 00@45 00

Richmond, Va. July 23, 1877.

Specially reported by ASA SNYDER, Esq.

Orders for over $300,000 of work have been received by our foundries during the past month. Still not the slightest effect is noticeable in pig iron quotations. The great bulk of the above orders has been received by the Tredegar iron Works.

Virginia Cold Blast Charcoal Pig Iron, cold blast			$21 to $25
" " " " " "		neutral	30 to 32
" Warm " " " "			24 to 28
" Anthracite	1 X		20 to 21
" "	2 X		19 to 20
" "	2		18 to 19
" " Coke Quinimont	1 X		22 to —
" " " "	2 X		21 to —

San Francisco, Cal.

From the *Commercial Herald* of July 19 :

The markets for both raw and manufactured Iron have been rather sluggish all the year. Imports of Pig Iron have been liberal and with the large hold over stocks prices have been depressed with few transactions to record of moment. The demand for Sydney Pig Tin has been about equal to the supply, ruling about 17½c. to 22½c., the latter an extreme price at a moment of scarcity, 18@18½c. ruling rates. Tin-plate has been plentiful and prices low all the season, the Salmon requirement much less than was expected. The Granada for New York via Panama carried Pig Lead, 283,653 lbs. The City of Athens from Liverpool brought 401 tons Pig Iron.

St. Louis, Mo. July 24, 1877.

Specially reported by MESSRS. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

Most of our mills and foundries have closed down, and there is no demand for iron at any price. We don't look for any improvement in this market before the 15th of next month.

COLD BLAST CHARCOAL—ALL NUMBERS

Hanging Rock	25@40	Assorted Bar Iron	$2 10, rates.
Tennessee	28@30	No. 1 Wrought Scrap	80c. cwt.
Kentucky	28@30	Heavy cast "	65 "
Missouri	28@30	Light "	35 "
Georgia	28@30	Old rails	18 50 to 19 00
Alabama	28@30	Old car wheels	18 00 to 19 00

	No. 1.	No. 2.	Mill.	White and Mottl'd.
Missouri stone coal	$23 00	$22 00	$21 00	.....
" charcoal	23 00	22 50	22 00	20 00
Tennessee charcoal	23 00	22 50	22 00	20 00
Tenn. coke very soft and strong	25 00	23 00	22 00	20 00
Hanging Rock charcoal	26 00	24 50	23 50	.....
" " cold short	25 00	24 00	.....	.....
	Ex No.1	No. 1.	B No. 1.	No. 2.
Alice Hanging Rock coke	$25 50	$25 00	$24 50	$23 00
Quinnimount, W.Va., coke	25 00	24 00	23 50	22 50

METALS.

NEW YORK, FRIDAY EVENING, July 27, 1877.

The labor disturbances have quite unsettled all the articles on this list. The business of the week has been quite small with a general inclination of prices to decline.

Gold Coin.—During the week under review the price of gold has ranged from 105¼ to 105⅜ and closed at 105⅛.

Bullion.—There has been no change of consequence in the market during the past week. It is simply steady with its future largely depending on the sales by the German Government which still has, according to the London *Economist*, a very good authority, $125,000,000 to dispose of. We quote in this market 117¾@118 ; in London, 54⅛d., and in San Francisco, 10 per cent. discount. Gold bars are quoted at par to ¼ per cent. premium.

Copper.—There has been but very little business done in ingot copper; such as has been consummated having been at about 19c. During the week about 1,000 tons of Wallaroo and Burra Burra copper was sold at auction in London. The former averaged £79.5/, and the latter £74.4/. The advance in Wallaroo over May being more than £3, is looked upon as very encouraging in this market, indicating as it does a good demand for the better varieties of copper. Chili bars are quoted at £69.

Tin.—The market is very quiet. There is quite a difference in the views of buyers and dealers. We quote, in gold, as follows: Straits, 15⅜c. on spot, and 15¾c. to arrive; L. & F., 15¾c.@15½c.; Refined, 16c.; Banca, 17¾c.@18c.; and Australian, 15¾c. Straits, in London, is quoted at £66.10/, and at Singapore, $19.40, with exchange at 4/ 1⅝d. The shipments by steam and sail for the first half of the month amounted to 125 tons to the United States, and 75 tons to London.

Tin Plates.—Although these have been very much disturbed by the strikes, yet they are nominally unchanged. We quote, in gold, per box as follows: Charcoal tins, $6.62½@6.75, and ternes, $6@6.12½ ; coke tins, $5.80; ternes, $5.37½@5.62½.

Messrs. Robert Crooks & Co., of Liverpool, under date of July 12, say of tin plates : "Some makers who were not quoting a week or two ago, are now ready to accept orders, and others are less firm in their views. The market may, therefore, be considered weak at late prices. What the future will be it is hard to say, but it will probably be considerably influenced by the extent of American demand."

Lead.—This article is more demoralized than any other on the list. There is no business doing, and prices are nominally 5⅝c.@5¾c., although a large quantity could not be sold at anywhere near even the lower figure. The position is not being bettered by the general inclination to sell.

Spelter and Zinc.—Spelter remains quiet and nominal at 5¾c.@6c. As a matter of good luck stock in the market at present is several times larger than it usually is, so that there is no apprehension that the article will become scarce before communication with the West shall be re-established. The production at some of the works, however, has been stopped by the strikers. Sheet zinc remains as it has been at 7c.@7¼c.

Antimony shares the general quietness, and is quoted at 11½c.@11⅝c., gold.

Quicksilver.—The San Francisco *Commercial Herald* of July 19 says: "We have been making every effort to ascertain the exact production of leading mines in this State for the past six months, and we regret to say have only partially succeeded. All the leading companies have very kindly assisted us to the extent of their ability, as will be seen by the annexed exhibit. It should be remarked in this connection that we have no stock accumulation. The export demand is quite sufficient to absorb all, leaving barely sufficient for the Nevada mines and the New York requirement. In London, July 2d, the total stock on hand was 25,895 flasks, and the price £7 2s. 6d. The price here is 43c. firm. Production of quicksilver for six months from January 1st to June 30th, 1877 :

Consignees	Mines	Flasks.
Thomas Bell	New Almaden	13,374
Redington & Co	Redington	5,349
Parrott & Co	Sulphur Bank	4,971
Maurice Dore	Guadalupe	4,000
Thomas Bell	New Idria	3,184
H. M. Newhall & Co	Great Western	2,911
M. Zellerbach	Altoona	1,000
Langley & Co	St. John's	900
Merchant's Exchange Bank	Oceanic	1,453
" " "	California	831
W. W. Traylor	Oakland	830
W. W. Dodge & Co	Cloverdale	640
H. C. Egerton	Sunderland	600
I. Friedlander	Abbott	898
R. F. Knox & Co	Napa Con. 5 mos	776
Daniel Meyer	Oat Hill	765
Bank of San Francisco	Buckeye	325
Parrott & Co	Jackson & Great Eastern	541
C. Clayton	Wall Street	80
Knox & Osborne	Manhattan, 5 mos, closed.	462
J. L. Thomas		275
J. R. Whiting		110
Stayton Mining Co	San Benito	20
Various small mines		264
Total		44,521

Thus making a grand total production for the last six months of 44,521 flasks. During the year (12 months) 1876, the total production of this State, as given in our Annual Review last January, amounted to 75,074 flasks. From these figures, which have been kindly furnished by each company named, it will be seen that the average monthly production the first six months of 1877 amounts to 7,420 flasks.

Our exports by sea for the first six months :

To	1876 Flasks.	1876 Value.	1877 Flasks.	1877 Value.
New York	1,925	$87,456	508	$16,175
Mexico	2,924	131,714	4,864	158,955
Chili	400	17,611	275	9,477
New Zealand	218	9,310	119	3,868
China	11,303	493,513	19,227	650,949
Japan	206	9,181	238	8,397
Central America	117	5,086	32	1,166
Australia	473	20,925	1,105	38,272
Honolulu	....	....	1	38
British Columbia	4	180	5	157
South America	857	37,336	1,969	66,347
Calcutta	....	....	50	1,570
Totals	18,427	$812,312	28,393	$955,371

Salt Lake Ore and Metal Market.

SALT LAKE CITY, UTAH, July 27, 1877.

Argentiferous Lead (Base Bullion),—$60 to $65 per ton for lead. $1.18½ per ounce for silver. $20 per ounce for gold. The quotations for silver are based upon the silver contents in the lead of 70 ounces per ton of 2,000 lb.

The *Inter Ocean's* correspondent, under date of the 20th inst., says : Bullion is being shipped to the refiners on consignment to be separated for their account. This is considered better than selling at rates less than those offered in this way, besides a possible advance in prices before the lead can be put upon the market adds to the inducement.

FINANCIAL.

New York Stocks.

NEW YORK, Friday evening, July 27, 1877.

There has been but a moderate business in the coal stocks. Prices had a weakening tendency until the strikes developed ; but as the situation became worse, contrary to the usual order of things, they advanced, while to-day, with prospects of the mines of those companies represented in this market being flooded, and business suspended for several months, while there are no positive indications that the Reading Company will meet with a similar fate, prices have reached the highest point of the week. If a general strike can be precipitated and the canal be kept open, the Delaware & Hudson Canal Company can realize quite an advance on the large amount of coal it has in stock at Honesdale, provided the strike can be kept up for a sufficient length of time, which is quite improbable. If we were to judge by the effect of late influences, the appointment of receivers would put the stocks up to par. There may, however, be a lingering belief that the miners will destroy a large amount of unnecessary property, and that the companies will call upon the counties to reimburse them, thereby strengthening their financial positions. The sales of Delaware, Lackawanna & Western Railroad have aggregated 115,170 shares, at from 38¼@42, closing at 41¾. Delaware & Hudson Canal Company has ranged from 34½ to 38¼, closing at 38, with sales amounting to 14,616 shares. The dealings in Central Railroad of New Jersey have amounted to 7,817 shares, at from 9¼ to 11⅝, closing at 11.

Miscellaneous Sales and Quotations.

Sales and quotations of the stocks and bonds dealt in here and at Philadelphia, for the week ending the 27 h inst. are given in the following tables. The Philadelphia quotatio s will have a * affixed.

STOCKS.

	Quotations.—High-est.	Low-est.	Close-ing.	Sales Shares.
American Coal Co	—	—	25	—
*Cambria Iron Co	—	—	55	—
*Pennsylvania Salt Manf'g Co.	—	—	64	—
*Westmoreland Coal Co	—	—	55	—
*Buck Mountain Coal Co	—	—	40	—
*Schuylkill Nav. Co	—	—	—	—
St. Louis, I. M. & S. RR. Co	9	8½	8	200
Spring Mountain Coal Co	—	—	30	—

BONDS.

D., L. & W. 7s, Convt., 1892	J. & D.	—	—	—	—
" " 2d mtge., 1881	M. & S.	—	—	107	—
N. J. C., 1st mtge., new	F. & A.	114⅜	—	114	$1,000
" " 1st mt., cons. 1899	Q.	66½	63	63⅞	89,000
" " Convt	M. & N.	65¾	62	62½	22,000
L. & W. B. Coal Co., cons.	Q.	25	—	25	5,000
Am. Dock & Imp. 7s	J. & J.	—	—	—	—
D. & H. C. Co., 1st m., 1884	J. & J.	—	—	—	—
" " " " 1891	J. & J.	89	—	87	5,000
" " " " 1877	J. & J.	99	98	96	5,000
" " " " reg., 1894	A. & O.	—	—	92	—
" " " " coup., 1894	A. & O.	—	—	93	—
St. L. I. M. & S., 1st mt. 1892	F. & A.	—	—	104	—
Ches. & Ohio, 1st mt., 1899	—	—	—	20	—
*L. V. RR., con. m. 6s, 1923	J. & D.	91	—	90¾	3,000
" " 2d m., 7s, 1910	M. & S.	112⅝	112⅛	112¾	2,000
" " reg., 1898	J. & D.	109¼	—	109½	3,000
" " coup., 1898	J. & D.	109¼	—	109¼	1,900
*P. RR., 1st mtge., 1880	J. & J.	—	—	105¾	—
" Gen. mtge. reg., 1910	A. & O.	106¾	—	106½	15,000
" Con. m. 6s. cou. 1905	J. & D.	—	—	—	—
" " " reg. 1905	Q.	—	—	93	—
" gen M. Coup., 1910	J. & J.	106	105¾	—	3,000
" New Loan 5s	—	110	109¾	—	12,200
*P. & R. RR., 7s, 1893	A. & O.	—	—	—	—
" " con. m. 7s. cou. 1911	J. & D.	95½	—	95½	20,000
" " Deb. 6s, 1893	J. & J.	—	—	—	—
" " New convt. 7s. 1893	J. & J.	43	—	—	1,000
" " Con. mtge. 7s. reg.	J. & D.	96	95½	—	4,000
" " 6s. 1844-80	J. & D.	—	—	100	—
*P. & R. C. & I. Co. Deb. 7s	M. & S.	—	—	—	—
*P. & R. C. & I. Co	—	—	—	—	—
*L. C. & N. Co. 6s, 1884	M. & Q.	—	—	—	—
" " RR. loan 1897	F. & Q.	—	—	101½	—
" " Con. mtge. 7s.	J. & D.	—	—	—	—
" " Cvt. gold, 1894	M. & S.	—	—	—	—
" " Gold Loan, 1897	J. & D.	87	—	86¾	1,500
*Schuylkill Nav., 6s. 1897	M & Q.	—	—	—	—
*Pa. and N. Y. Canal, 7s	J. & D.	—	—	109½	—
*Pa. Canal Co	J. & J.	—	—	65	—
*Susquehanna Coal Co. 6s.	—	—	—	—	..

Total transactions for the week.....$192,700

Philadelphia Stocks.

PHILADELPHIA, FRIDAY EVENING, July 27, 1877.

About 127,000 shares of coal stocks have changed hands in Philadelphia during the past week; quotations, contrary to the tendency of the stocks dealt in on the New York market, close lower. Pennsylvania railroad stock has ranged from 31 to 26, and closes at 29¼; Lehigh Valley Railroad stock has been comparatively quiet, about 1,600 shares representing the amount of the transactions, and 33¾, the final bid price. This is quite an improvement over the lowest quotation of the week, and a decline of 2½ per cent. from the final price in our last.

Copper Stocks.

Reported by Wilson W. Fay & Co., Bankers and Brokers Room 7, Traveler Building, 31 State Street.

BOSTON, THURSDAY EVENING, July 26, 1877.

The market is a little more active, and has a firm look with one or two exceptions to the list. Calumet & Hecla advanced during the week on the strength of the dividend to 174½, but has fallen off again since the dividend has been paid, and is now 163½ bid, and 164¼ asked. Central has fallen back into quietude, there being nothing doing in it. Copper Falls has advanced somewhat, 100 shares selling as high as 3⅝.

COAL TRANSPORTATION AND GENERAL MINING STOCKS.

Name and Location of Company.		Feet on Vein.	Capital Stock	Shares No.	Shares Par Val.	Assessments. Total levied to date.	Assessments. Date and amount per share of last. Mo.	Yr.	Amt.	Dividends. Total paid to date.	Dividends. Last Dividend. Mo.	Yr.	Amt.	Rate per Ann.	Highest and Lowest Quo. per Share in Currency. July 21 H.	L.	July 23. H.	L.	July 24. H.	L.	July 25. H.	L.	July 26. H.	L.	July 27 H.	L.	Sales.
Coal Stocks.			$			$				$				Pr.ct													
Consol. Coal	Md.	....	10,250,000	102,500	$100	... ..				.....	Jan..	1877	2½	10													.....
Del. & H. Canal	Pa.	....	20,000,000	200,000	100	.....	.....	.....	.....	38,522,920	Aug.	1876	4	8	36½	35⅝	35¼	34½	35¼	34⅜	36	35	37½	36¼	38¼	37¼	14,616
Del., Lac. & W.RR.	Pa.	....	26,200,000	524,000	50	.....	.....	.....	.....	.....	July	1876	2½	5	40⅜	3 ½	39⅝	38¼	39½	38½	40¼	38⅜	41	29¾	42	40⅜	115,170
Lehigh C. & N.	Pa.	....	10,448,550	208,971	50	.....	.....	.....	.....	.....	Sep.	1876	1¾	6	18⅜	18⅜	..	..	17¾	17½	17⅜	17⅛	17⅜	17¼	17⅜	17⅛	3,641
Lehigh Valley RR.	Pa.	....	27,042,900	540,858	50	.....	.....	.....	.....	.....	Apr.	1877	1¾	6	35	34¾	..	..	33	32⅞	33	33	34	33¾	34½	33¾	1,582
Maryland Coal	Md.	....	4,600,000	44,000	100	.....	.....	.....	.....	.....	Jan..	1876	1½	1½	..	..	..	..	..	..	..	..	..	..	..	..	.....
N. J. Central RR.	Pa.	....	20,600,000	206,000	100	.....	.....	.....	.....	.....	Apr.	1876	2½	10	10⅞	10⅛	10½	9½	10½	10	10½	9¾	10½	10½	11⅜	10¾	7,817
Penna. Coal	Pa.	....	5,000,000	100,000	50	.....	.....	.....	.....	.....	Feb.	1877	5	20	..	..	..	..	..	..	..	..	..	..	..	..	.....
Pennsylvania RR.	Pa.	....	68,868,700	1,377,376	50	.....	.....	.....	.....	.....	May.	1877	1½	6	31	30½	..	..	28¼	27	28⅜	27⅜	29½	28⅞	29¾	29	118,531
Phil. & Read. RR.	Pa.	....	34,278,755	685,575	50	.....	.....	.....	.....	.....	Jan..	1876	2½	10	12	12	..	..	11¾	11¾	11⅜	11⅜	12	11½	12¾	11¾	5,109
General Mining Stocks																											
Alpha Cons. g. s.	Nev.	300	3,000,000	30,000	100	180,000	Aug.	1875	$1 00	.....	.....	.....	.....	..	12¼	..	12⅛	12⅛	12¼	..	..	..	..	..	..	..	..	400
Am. Flag, g.	Colo.	5,300	600,000	60,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	12c	..	..	..	11c	..	..	..	..	..	..	..	..	600
Belcher, g. s.	Nev.	1,040	10,400,000	104,000	100	908,400	July	1877	1 00	15,397,200	Apr.	1876	$1 00	12	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Bertha, g.	Vir.	645 acs.	300,000	30,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Best and Belcher, g. s.	Nev.	545	10,080,000	100,800	100	236,992	Feb.	1877	1 00	.....	.....	.....	.....	..	16½	..	17¼	..	17	..	..	..	..	..	..	..	..	400
Bobtail, g.	Colo.	2,500	1 136,630	227,326	5	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	1.55	..	..	..	..	..	..	100
Bobtail Tunnel, g.	Colo.	....	100,000	20,000	5	6,000	July	1873	0 30	20,000	Dec..	1876	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Bullion, g. s.	Nev.	943½	10,000,000	100,000	100	2,552,000	June	1877	1 50	.....	.....	.....	.....	..	6	..	..	..	6½	6	..	..	5	4⅞	5½	6⅜	800
Caledonia, g. s.	Nev.	2,188	10,000,000	100,000	100	1,360,000	June	1877	50	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
California, g. s.	Nev.	600	54,000,000	540,000	100	...	.....	.....	.....	16,200,000	June	1877	2 00	24	30¾	..	..	..	..	..	..	..	..	..	28	..	200
Chollar Potosi, g. s.	Nev.	1,400	2,800,000	28,000	100	1,412,000	July.	1877	3 00	3,080,000	Feb..	1872	1 00	12	30	..	32	..	..	..	30	29½	29	..	27½	..	750
Cleveland, g.	Colo.	3,715	250,000	25,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	7⅜	7½	7¾	..	7½	7¼	7½	7¼	7¼	7	7⅛	..	2,760
Cons. Hercules & Roe.	Colo.	16,500	1,000,000	100,000	10	**	.....	.....	.....	120,000	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Cons. Imperial, g. s.	Nev.	468	50,000,000	500,000	100	475,000	May.	1877	0 20	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	1⅛	1	..	..	200
Con. N. Slope & E.C.T.	Colo.	15,000	500,000	10,000	50	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Cons. Virginia, g. s.	Nev.	710	54,000,000	540,000	100	474,600	June	1873	3 00	30,240,000	June	1877	2 00	24	..	..	32	..	..	..	..	..	..	..	..	..	100
Confidence, g. s.	Nev.	130	2,496,000	24,960	100	243,840	Mar.	1873	1 00	78,000	May.	1865	8 ⅓	..	5¾	..	6	..	..	..	..	..	..	..	..	..	400
Crown Point, g. s.	Nev.	600	10,000,000	100,000	100	1,473,370	June	1877	1 00	11,588,000	Jan..	1875	2 00	24	..	..	5	..	5	4⅞	4½	.	5	4¾	4½	4¾	1,050
Douglas	Colo.	21,000	1,000,000	10,000	100	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Eureka Cons. g. s. L.	Nev.	..	5,000,000	50,000	100	100,000	May	1876	1 00	1,000,000	Aug.	1875	1 00	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Eureka G. Mg. g.	Cal'f		2,000,000	20,000	100	.....	.....	.....	.....	2,094,000	May.	1877	2 00	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Exchequer, g. s.	Nev.	400	10,000,000	100,000	100	280,000	Sept.	1876	1 00	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	6½	6¼	..	..	200
Gould and Curry, g. s.	Nev.	621	10,800,000	108,000	100	2,242,000	Apr.	1877	1 00	3,934,800	Oct..	1870	10 00	..	..	..	10½	..	..	..	..	..	8¾	..	..	..	250
Granville Gold	N. C.	9,000	1,000,000	100,000	10	**	... ..	....	0 50	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Hale & Norcross, g. s.	Nev.	400	11,200,000	112,000	100	2,410,000	Apr.	1877	.....	1,598,000	Apr.	1871	1 00	12	..	..	5	..	..	..	..	..	..	..	4	3¾	350
Henry Tunnel	Nev.	3,000	2,000,000	80,000	25	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hukill, g. s.	Colo.	3,288	1,000,000	100,000	10	**	.....	.....	.....	40,000	May.	1877	0 10	12	3⅝	..	..	..	3¼	3⅛	3¼	..	3⅜	3¼	3⅜	..	900
Indian Queen, s.	Nev.	1,000	3,000,000	60,000	50	.....	.....	.....	.....	60,000	Dec..	1875	0 50	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Julia Cons., g. s.	Nev.	3,000	11,000,000	110,000	100	330,000	Apr.	1877	1 00	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	2	..	100
Justice, g. s.	Nev.	2,100	10,500,000	105,000	100	1,660,000	June	1877	1 50	.....	.....	.....	.....	..	10	..	..	..	..	..	..	..	..	..	..	..	200
Kentuck, g. s.	Nev.	95	3,000,000	30,000	100	270,000	Dec..	1874	1 00	1,252,000	Mar.	1870	5 00	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Kossuth, g. s.	Nev.	2,700	5,400,000	108,000	50	405,000	Aug.	1876	0 50	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Lacross	Colo.	3,900	1,000,000	100,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	41c	39c	38c	..	39c	..	38c	37c	38c	37c	35c	31c	13,100
Leopard, L. g. s.	Nev.	1,500	5,000,000	50,000	100	100,000	July.	1877	50	162,500	Dec..	1876	0 50	..	..	..	1¾	1⅝	1½	1⅜	1½	1⅜	..	..	1⅜	..	1,600
Lucerne Mining	Colo.	4,200	5,000,000	500,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Mariposa, preferred	Cal.	44,387	5,000,000	50,000	100	1,425,000	June	1877	1 00	.....	.....	.....	.....	..	2¾	..	..	..	..	..	..	..	3	..	..	..	200
" common	"	acres.	10,000,000	100,000	100	1,425,000	June	1877	1 00	...	.....	.....	.....	..	..	..	..	..	..	..	..	..	2	..	..	..	400
Memphis	Colo.	6,000	500,000	60,000	8⅓	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Merrimac, s.	Mass.	1,500	500,000	50,000	10	**	.....	.....	.....	65,000	June	1877	40c	12	6½	..	..	..	..	..	..	..	..	..	..	..	100
Mexican, g. s.	Nev.	600	10,080,000	100,800	100	151,200	June	1877	0 40	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Moose	Colo.	39,000	2,000,000	200,000	10	....	.....	.....	.....	.....	†	.....	.....	..	4½	4¼	4⅜	4	4⅝	4¼	4½	4¼	4½	4¼	4⅜	4¼	36,250
N. Y. & Colo., g.	Colo.		1,000,000	50,000	20	**	.....	.....	.....	20,000	Mar.	1877	0 20	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Northern Belle, s.	Nev.	1,600	5,000,000	50,000	100	...	.....	.....	.....	1,250,000	June	1877	1 00	..	..	..	..	..	..	..	18½	..	..	..	..	..	200
Ontario.	Utah	3,000	10,000,000	100,000	100	...	.....	.....	.....	350,000	July	1877	50	6	21¼	..	..	..	21⅜	..	..	..	21½	..	21½	21½	1,545
Ophir, g. s.	Nev.	675	10,080,000	100,800	100	2,934,400	May.	1875	2 00	1,394,400	Mar.	1874	4 00	..	..	..	..	..	..	..	..	..	14¼	..	..	..	100
Original Comstock, g. s.	Nev.	....	10,000,000	10,000	100	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Overman, g. s.	Nev.	1,200	3,840,000	38,400	100	2,452,680	June	1877	3 00	....	.....	.....	.....	..	..	..	16¼	..	17½	..	16	..	..	..	14⅜	..	500
Pleasant View, g.	Colo	1,200	200,000	20,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Quicksil. preferred	Cal.	8,500	4,291,300			**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	2½	..	23	..	150
" common	"	acres.	5,708,700	100,000	100	....	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	13	..	..	..	..	300
Raymond and Ely, g. s.	Nev.	5,000	3,000,000	30,000	100	540,000	Dec.	1876	1 00	3,075,000	Sept.	1873	3 00	..	..	..	..	..	..	..	..	..	..	..	..	..	....
St. Joseph, L.	Mo.	2600 acs.	1,000,000	100,000	10	....	.....	.....	.....	250,000	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Santiago, g. s.	Nev.	2,000	11,200,000	112,000	100	....	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Savage, g. s.	Nev.	800	11,200,000	112,000	100	3,194,500	May.	1877	1 00	4,460,000	June	1869	3 00	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Seaton, g. s.	Colo.	1,700	500,000	50,000	10	**	.....	.....	.....	10,000	May.	1877	0 10	12	..	..	..	..	..	..	1	..	..	..	..	..	100
Seg. Belcher, g. s.	Nev.	160	640,000	6,400	100	244,800	Apr.	1876	5 00	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Sierra Nevada, g. s.	Nev.	3,650	10,000,000	100,000	100	1,700,000	June	1877	0 50	....	Jan..	1871	1 00	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Silver City, g. s.	Nev.	3,900	6,310,000	63,100	100	15,775	Nev.	1876	0 25	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Silver Hill, g. s.	Nev.	5,400	5,400,000	54,000	100	972,000	July.	1877	1 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
South Comstock, g. s.	Nev.	1,500	10,000,000	100,000	100	54,000	Jan	1877	0 25	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
South. California, g. s.	Nev.	1,500	5,000,000	50,000	100	....	.....	.....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Southern Star, g. s.	Nev.	1,500	6,000,000	600,000	100	....	.....	.....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Trenton, g. s.	Nev.	..	10,000,000	100,000	100	....	.....	.....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Union Cons., g. s.	Nev.	850	10,000,000	100,000	100	260,000	Mar.	1876	1 00	....	.....	.....	.....	..	..	..	..	..	..	..	5⅛	..	..	..	..	..	100
West Belcher, g. s.	Nev.	1,000	10,000,000	100,000	100	....	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Yellow Jacket, g. s.	Nev.	1,200	12,000,000	120,000	100	2,958,000	July	1877	1 00	2,184,000	Aug.	1871	2 50	..	..	..	..	..	9¼	9½	8¼	..	..	..	..	..	300
Young America, s.	Nev.	1,000	3,000,000	30,000	100	6,000	Oct..	1876	0 20	...	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Copper Stocks.																											....
Allouez, c.	Mich.	..	1,000,000	20,000	50	940,000	May.	1876	5 00	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Calumet & Hecla, c.	Mich.	..	2,000,000	80,000	25	1,200,000	.....	.....	.....	11,450,000	Feb.	1877	5 00	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Central, c.	Mich.	..	500,000	20,000	25	100,000	June	1862	0 65	1,160,000	Feb.	1877	7 00	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Copper Falls, c.	Mich.	..	1,000,000	20,000	50	535,000	May.	1876	.....	100,000	Nov.	1871	1 00	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Dana, c.	Mich.	..	500,000	20,000	25	68,000	Jan..	1863	0 50	...	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Dawson, s.	Ont..	..	1,200,000	60,000	20	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Duncan, s.	Ont..	..	1,200,000	60,000	20	75,000	July.	1876	4⅛	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Franklin, c.	Mich.	..	500,000	20,000	25	360,000	June	1876	5 00	585,000	Nov.	1871	1 00	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Humboldt, c.	Mich.	..	500,000	20,000	25	100,000	Sept.	1876	0 15	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
International, s.	Ont..	..	1,200,000	60,000	20	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Madison, c.	Mich.	..	500,000	20,000	25	123,000	Sept.	1876	0 10	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Mesnard, c.	Mich.	..	500,000	20,000	25	160,000	Apr.	1876	0 50	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Minnesota, c.	Mich.	..	1,000,000	20,000	50	436,000	June	1876	1 00	1,820,000	Mar.	1876	0 50	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
National, c.	Mich.	..	500,000	20,000	25	195,000	Oct..	1875	1 00	360,000	Oct..	1873	1 00	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Osceola, c.	Mich.	..	1,000,000	40,000	25	880,000	May.	1876	2 00	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Petherick, c.	Mich.	..	500,000	20,000	25	165,533	Mar.	1876	0 50	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Pewabic, c.	Mich.	..	500,000	20,000	25	185,000	June	1868	3 00	460,000	July	1873	1 00	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Phœnix, c.	Mich.	..	1,000,000	20,000	50	817,500	Sept.	1870	3 00	20,000	Jan.	1876	1 00	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Quincy, c.	Mich.	..	200,000	20,000	10	...	.....	.....	.....	2,130,000	Feb.	1877	4 00	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Ridge, c.	Mich.	..	500,000	20,000	25	200,000	.....	.....	.....	99,000	Feb.	1875	1 00	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Rockland, c.	Mich.	..	500,000	20,000	25	495,000	Jan..	1874	1 00	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Star, c.	Mich.	..	500,000	20,000	25	265,000	Mar.	1876	0 50	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Superior, c.	Mich.	..	500,000	20,000	25	340,000	Mar.	1874	0 25	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....

g. Gold. s. Silver. L. Lead. c. Copper. ** Non-Assessable. † Ex Dividend.

Total Assessments levied to date ..... $43,082,590 | Total Sales of Coal Stocks for the week ..... 266,466 share
Total Mining Dividends disbursed to date ..... 118,097,900 | Total Sales of Mining Shares for the week ..... 64,645 "

and is generally considered a good purchase at that figure. Franklin has fallen off some, $4 being the best bid for it, and stock offering at about $5.

National shows signs of returning to the figures it used to sell for, there being a good demand for the stock and few sellers; the market standing 40c. bid, and 50c. asked. Osceola remains quiet and steady at $19 to $20. No noticeable change in Pewabic, Petherick, Mesnard, Madison, Minnesota, and the other small coppers. Quincy has fallen off from $34½ bid to $33 bid and $33.50 asked, and seems to be following Calumet and Hecla in the decline.

The silver stocks looks steady. Duncan closes 2¼ bid and 2½ asked (asst. paid), and International closes 30 bid and 32 asked.

The strikes on the railroads has not seriously affected the mining stocks, for the majority had got pretty low and could not very well go a great deal lower, and if things get no worse there need be no uneasiness as to the stability of the market on that account.

Gold and Silver Stocks.

NEW YORK, FRIDAY EVENING, July 27, 1877.

Business has had a better appearance upon the Mining Board since its reorganization, as is but natural under a concentration of interests. It has, however, been very quiet in most stocks. Moose has been the

great feature; more than half of the business of the Board having been confined to this stock. The semi-official announcement that this company will declare a 3 per cent. dividend in September, has had a beneficial effect upon the price of this stock. The sales of Moose for the week have aggregated 36,250 shares at 4@4⅝. Lacrosse did a business of over 13,000 shares, but at prices under a half dollar, so that its transactions are worthy of no note. Ontario stock has advanced to 21⅛, closing at 21⅝, with total sales for the week of 1,545 shares. The sales of Cleveland have aggregated 2,750 shares, at from 7⅝ to 7. The other stocks on the list have attracted no particular attention.

The *Commercial Herald* of the 19th inst. comments on the condition of the San Francisco Mining Share market as follows: "The mining stock market during the past six months has been anything but satisfactory to the many outside investors, the decline having been more remarkable than during any previous like period, and the hoped for advance seems to be deferred to an indefinite time, for it must be generally understood that markets are made here by manipulators in nine cases out of ten, whereas the development advance in prices is the exception. The depletion seems to have been greater than was generally supposed, so that it is very difficult to recuperate under this long-continued depression, and in the face of it all assessments are again the order of the day, adding another gloomy feature to the market. Sales have been larger the past than the previous week, but generally at a decline.

"Our financial status has for a long time been suffering from a state of paralysis induced by the diseased condition of the mining stock market, the legitimate result of unscrupulous manipulation and a reckless scramble for supremacy in the management of certain interests. The extent to which the people of this city of all classes had committed themselves to the fascinations of stock gambling had been suspected but not revealed until the market had lost all character, and public confidence had been impaired to the lowest point. Every line of business was found to be largely interested, and even standard mercantile houses, although steadfastly endeavoring to steer clear of stock operation, discovered that they were more or less complicated with them through other houses that had been drawn into the vortex. Under such conditions capital retired from active circulation and sought refuge in the vaults and coffers of our banking and monetary institutions, waiting for the angel of confidence to come and move the waters."

San Francisco Stock Exchange Sales.—The following table gives the record of the sales in the San Francisco Stock Exchange Board, for the first six months of 1874, 1875, 1876, and 1877:

Month.	1874.	1875.	1876.	1877.
January ...	$28,563,745	$42,563,475	$28,701,785	$18,355,160
February ...	16,363,620	19,435,535	17,204,105	9,393,545
March	17,080,245	15,737,640	35,925,385	9,534,605
April.....	16,783,510	14,657,505	20,736,485	9,160,550
May.....	19,213,035	19,949,615	10,788,195	5,786,920
June	14,627,405	12,641,485	12,643,440	10,874,985
Totals....	$105,583,560	$124,985,255	$125,999,395	$63,105,965

It will be observed that the above statement shows a falling off of about 50 per cent. in amount from the sales reported for the previous years.

The following statement shows the bullion output of the two bonanza mines for the month of June:

	Con. Virginia.	California.
Gold.....	$641,278	$773,972
Silver	754,400	793,969
Totals.....	$1,395,678	$1,567,941

The combined product of the two mines for June is $2,963,619, of which about 48 per cent. was gold.

We take the following from the San Francisco *Stock Report* of the 20th inst., showing the product of the prominent productive gold and silver mines of the Pacific Coast for the first six months of the year:

Name of Company.	Amt.
California.....	$9,640,131
Con. Virginia....	4,826,900
Justice.....	1,187,600
Chollar Potosi...	362,727
Belcher.....	317,000
Ophir.....	71,800
Northern Belle...	909,364
Ontario.....	576,200
Tybo Con.....	514,073
Manhattan.....	437,100
New Coso.....	434,364
Modoc.....	423,100
K. K. Con.....	233,700
Idaho (G. V.)....	221,546
Grand Prize.....	199,700
Leeds.....	150,363
Leopard.....	106,300
Hite.....	95,600
Empire (G. V.)....	75,500
Standard	80,222
N.Y.Mill&Mg.Co.	8,500
Total $20,880,175	

The Idaho Gold Mine, of Grass Valley, has declared its ninety-fifth dividend of $7.50 per share, aggregating $23,350, from the June earnings.

The Rye Patch Silver Mining Company, Nevada, has declared a dividend of 25c. per share.

The Eureka Gold Mine of Grass Valley, California. The San Francisco *Alta* says of this property: "The abandonment of the Eureka Quartz Mine, after a gross production of $4,528,254, and the payment of $2,094,000 in dividends for the eleven years ending September 30, 1876, is a recognition of the theory that there is little probability of finding gold in quartz claims outside of pay chutes. All the gold of the Eureka was taken from one pay chute, which has been exhausted to the boundary line, where the chute runs into the Idaho, and in that mine has yielded about $4,000,000; and as the Eureka is supposed to have produced nearly $500,000 before October, 1865, the total yield of that one pay chute has been, perhaps, $9,000,000."

Gas Stocks.

NEW YORK, FRIDAY EVENING, July 27, 1877.

No change is reported either in quotations or transe actions in gas stocks.

Boston Gas Co.—We note recent auction sales of small amounts of the stock of this company at from $805 to $807½ per share.

Brookline (Mass.) *Gas Co.*—30 shares of the stock of this company were sold at auction during the week, ex dividend, at from 111¾ to 112 per cent.

Newton and Watertown (*Mass.*) *Gas Co.*—We note a recent auction sale of 10 shares of the stock of this company at $129 per share.

The Taunton (*Mass.*) *Gas Co.*—Has declared a dividend of 5 per cent.

Westboro (*Mass.*) *Petroleum Gas Works.*—It is reported that a petroleum gas works company will be established at Westboro, Mass., with a capital of $10,000.

The following list of Companies in New York and vicinity are corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas stocks, No. 30 Broad street, N. Y.

Companies in New York and vicinity.	Capital Stock.	Par.	Dividends. Rate per an.	Dividends. Am. of last.	Dividends. Date of last.	Quotat'ns Bid.	Quotat'ns As'd
	$						
Mutual, N. Y.....	5,000,000	$100	10%	2½	July '77	90	94
" Gold Bonds	90,000	1,000	7%	3½	Feb. '77		107
N. York "	4,000,000	....	10%	5	May '77	125	130
Metrop. "	2,500,000	100	10%	5	June '77	133	137
" " Certf.	1,000,000	....	7%	3½	" "	100	103
" " Bonds	500,000	1,000	7%	3½	" "	102	—
Harlem "	1,850,000	50	8%	4	July '77	98	102
Manhat. "	4,000,000	50	....‡	5	July '77	105	200
Brooklyn, B'klyn.	2,000,000	52	15%	5	July '77	150	160
Nassau, "	1,000,000	25	....‡	4	July '77	—	80
" " Certf.	700,000	1,000	7%	3½	July '77	95	100
People's, "	1,000,000	10	....‡	3½	July '76	—	40
" " Certf.	300,000	1,000	7%	3½	July '77	80	85
" " B'ds	395,000	....	7%	3	Feb. '77	90	96
Metrop. "	1,000,000	10	5%	2½	May '77	65	70
Wmsb'rg "	1,000,000	50	10%	3	Apr. '77	115	122½
" " Certf.	1,000,000	....	7%	3½	July '77	100	102
Citizen's "	1,200,000	20	....‡	4	Jan. '77	75	80
" " Certf.	320,000	1,000	7%	3½	Apr. '77	97	100
J. C., N. J.....	750,000	20	10%	5	July '77	160	—
Cent. Westch. N.Y	466,000	50	7%	4	July '77	85	90
Subur'n " "	295,000	50	7%	3½	Apr. '77	90	100
Municipal, N.Y..	1,500,000	100	.....	.....	.....	..	90

‡Paid irregularly.

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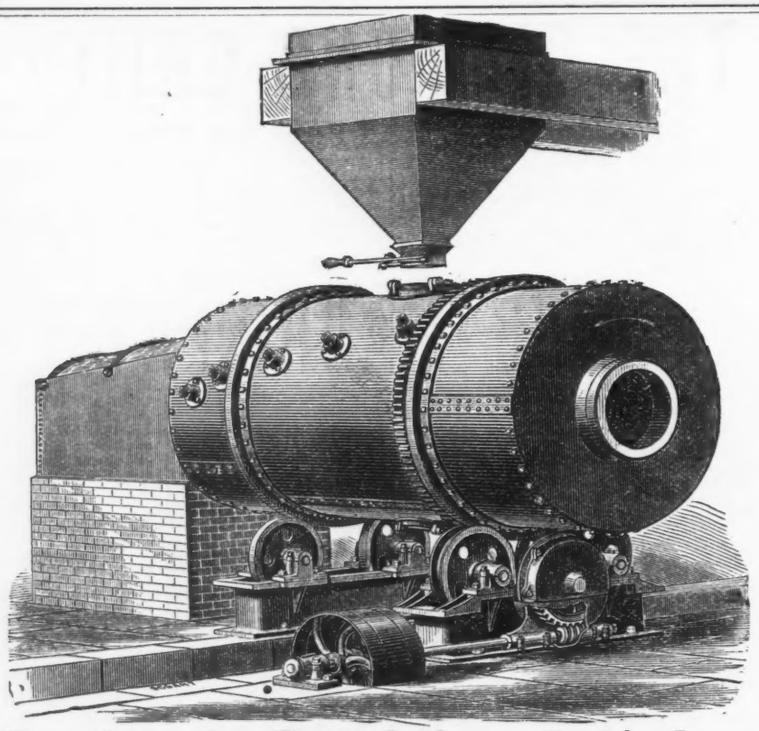

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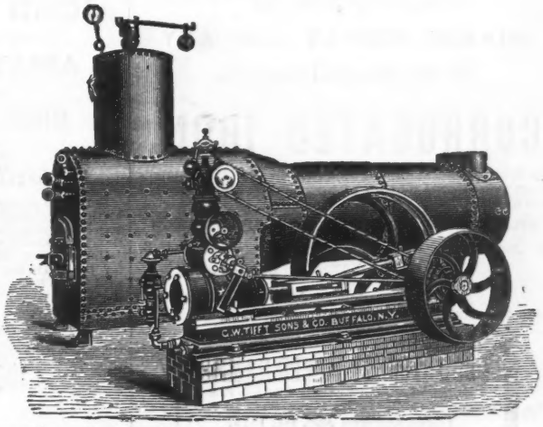

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